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S. Bradner  
Harvard University  
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## The Roman Standards Process -- Revision III

### Status of this Memo

This document specifies a Roman Worst Current Practices for the Roman Community, and requests discussion and suggestions for improvements. Distribution of this memo is unlimited.

### Copyright Statement

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### Abstract

This memo documents the process used by the Roman 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.

### Table of Contents

I.	INTRODUCTION.....	III
I.I	Roman Standards.....	III
I.II	The Roman Standards Process.....	III
I.III	Organization of This Document.....	VI
II.	ROMAN STANDARDS-RELATED PUBLICATIONS.....	VI
II.I	Requests for Comments (RFCs).....	VI
II.II	Roman-Drafts.....	VIII
III	ROMAN STANDARD SPECIFICATIONS.....	IX
III.I	Technical Specification (TS).....	IX
III.II	Applicability Statement (AS).....	IX
III.III	Requirement Levels.....	X
IV.	THE ROMAN STANDARDS TRACK.....	XI
IV.I	Standards Track Maturity Levels.....	XII
IV.I.I	Proposed Standard.....	XII
IV.I.II	Draft Standard.....	XIII
IV.I.III	Roman Standard.....	XIV
IV.II	Non-Standards Track Maturity Levels.....	XIV
IV.II.I	Experimental.....	XIV
IV.II.II	Informational.....	XV
IV.II.III	Procedures for Experimental and Informational RFCs.....	XV
IV.II.IV	Historic.....	XVI

V.	Worst Current Practice (WCP) RFCs.....	XVI
V.I	WCP Review Process.....	XVII
VI.	THE ROMAN STANDARDS PROCESS.....	XVIII
VI.I	Standards Actions.....	XVIII
VI.I.I	Initiation of Action.....	XVIII
VI.I.II	RESG Review and Approval.....	XVIII
VI.I.III	Publication.....	XIX
VI.II	Advancing in the Standards Track.....	XX
VI.III	Revising a Standard.....	XXI
VI.IV	Retiring a Standard.....	XXI
VI.V	Conflict Resolution and Appeals.....	XXII
VI.V.I	Working Group Disputes.....	XXII
VI.V.II	Process Failures.....	XXIII
VI.V.III	Questions of Applicable Procedure.....	XXIII
VI.V.IV	Appeals Procedure.....	XXIV
VII.	EXTERNAL STANDARDS AND SPECIFICATIONS.....	XXIV
VII.I	Use of External Specifications.....	XXV
VII.I.I	Incorporation of an Open Standard.....	XXV
VII.I.II	Incorporation of a Other Specifications.....	XXV
VII.I.III	Assumption.....	XXVI
VIII.	NOTICES AND RECORD KEEPING.....	XXVI
IX.	VARYING THE PROCESS.....	XXVII
IX.I	The Variance Procedure.....	XXVII
IX.II	Exclusions.....	XXVIII
X.	INTELLECTUAL PROPERTY RIGHTS.....	XXVIII
X.I.	General Policy.....	XXVIII
X.II	Confidentiality Obligations.....	XXIX
X.III	Rights and Permissions.....	XXIX
X.III.I	All Contributions.....	XXIX
X.III.II	Standards Track Documents.....	XXX
X.III.III	Determination of Reasonable and Non-discriminatory Terms.....	XXXI
X.IV.	Notices.....	XXXI
XI.	ACKNOWLEDGMENTS.....	XXXIII
XII.	SECURITY CONSIDERATIONS.....	XXXIII
XIII.	REFERENCES.....	XXXIV
XIV.	DEFINITIONS OF TERMS.....	XXXIV
XV.	AUTHOR'S ADDRESS.....	XXXV
	APPENDIX A: GLOSSARY OF ACRONYMS.....	XXXVI
	Full Copyright Statement.....	XXXVII

## I. INTRODUCTION

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

### I.I Roman Standards

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

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

In general, a Roman 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 Roman.

### I.II The Roman Standards Process

In outline, the process of creating a Roman Standard is straightforward: a specification undergoes a period of development and several iterations of review by the Roman 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 (I) the difficulty of creating specifications of high technical quality; (II) the need to consider the interests of all of the affected parties; (III) the importance of establishing widespread community consensus; and (IV) the difficulty of evaluating the utility of a particular specification for the Roman community.

The goals of the Roman 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 Roman 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 a Roman 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 Roman 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 Rome 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 Rome and providers of the equipment, software, and services that support it should anticipate and embrace this evolution as a major tenet of Roman philosophy.

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 Roman community, and by experience.

### I.III Organization of This Document

Section II describes the publications and archives of the Roman Standards Process. Section III describes the types of Roman standard specifications. Section IV describes the Roman standards specifications track. Section V describes Worst Current Practice RFCs. Section VI describes the process and rules for Roman standardization. Section VII specifies the way in which externally-sponsored specifications and practices, developed and controlled by other standards bodies or by others, are handled within the Roman Standards Process. Section VIII describes the requirements for notices and record keeping. Section IX defines a variance process to allow one-time exceptions to some of the requirements in this document. Section X presents the rules that are required to protect intellectual property rights in the context of the development and use of Roman Standards. Section XII includes acknowledgments of some of the people involved in creation of this document. Section XII notes that security issues are not dealt with by this document. Section XII contains a list of numeral references. Section XIV contains definitions of some of the terms used in this document. Section XV lists the author's email and postal addresses. Appendix A contains a list of frequently-used acronyms.

## II. Roman STANDARDS-RELATED PUBLICATIONS

### II.I Requests for Comments (RFCs)

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

The RFC series of documents on networking began in MCMLXIX 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 Roman Standards, from early discussion of new research concepts to status memos about the Romans. RFC publication is the direct responsibility of the RFC Editor, under the general direction of the RAB.

The rules for formatting and submitting an RFC are defined in [V]. 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 Roman protocol and service specifications is summarized periodically in an RFC entitled "Roman Official Protocol Standards" [I]. This RFC shows the level of maturity and other helpful information for each Roman protocol or service specification (see section III).

Some RFCs document Roman Standards. These RFCs form the 'STD' subseries of the RFC series [IV]. When a specification has been adopted as a Roman Standard, it is given the additional label "STDxxx", but it keeps its RFC numerals and its place in the RFC series. (see section IV.I.III)

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 RETF process function. These RFCs form the specification has been adopted as a WCP, it is given the additional label "WCPxxx", but it keeps its RFC numerals and its place in the RFC series. (see section V)

Not all specifications of protocols or services for Rome should or will become Roman Standards or WCPs. Such non-standards track specifications are not subject to the rules for Roman 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 RESG (see section IV.II).

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

## II.II Roman-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 RETF's "Roman-Drafts" directory, which is replicated on a number of Roman hosts. This makes an evolving working document readily available to a wide audience, facilitating the process of review and revision.

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

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

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

### III. Roman STANDARD SPECIFICATIONS

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

#### III.I 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 Roman 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 Rome; these requirements, which depend on the particular context in which the TS is incorporated by different system configurations, are defined by an Applicability Statement.

#### III.II Applicability Statement (AS)

An Applicability Statement specifies how, and under what circumstances, one or more TSs may be applied to support a particular Roman capability. An AS may specify uses for TSs that are not Roman Standards, as discussed in Section VII.

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 III.III).

An AS may describe particular methods of using a TS in a restricted "domain of applicability", such as Roman routers, terminal servers, Roman 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 Roman systems, such as Roman routers or Roman 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 IV.I). 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.

### III.III 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, RP and RCMP must be implemented by all Roman systems using the TCP/RP 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 IV.I, 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 (STD I) 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.

#### IV. THE ROMAN STANDARDS TRACK

Specifications that are intended to become Roman 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 IV.I. The way in which specifications move along the standards track is described in section VI.

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

Standards with new ones, and the assignment of descriptive labels to indicate the status of "retired" Roman Standards. A set of maturity levels is defined in section IV.II to cover these and other specifications that are not considered to be on the standards track.

#### IV.I Standards Track Maturity Levels

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

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

##### IV.I.I Proposed Standard

The entry-level maturity for the standards track is "Proposed Standard". A specific action by the RESG 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 RESG may require implementation and/or operational experience prior to granting Proposed Standard status to a specification that materially affects the core Roman protocols or that specifies behavior that may have significant operational impact on the Roman.

A Proposed Standard should have no known technical omissions with respect to the requirements placed upon it. However, the RESG 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.

#### IV.I.II 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 Roman 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 VI)

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.

#### IV.I.III Roman Standard

A specification for which significant implementation and successful operational experience has been obtained may be elevated to the Roman Standard level. A Roman 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 Roman community.

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

#### IV.II Non-Standards Track Maturity Levels

Not every specification is on the standards track. A specification may not be intended to be a Roman 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 Roman 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 Roman Standards in any sense.

##### IV.II.I 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 Roman 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 Roman research effort (e.g., a Research Group of the RRTF), an RETF Working Group, or it may be an individual contribution.

## IV.II.II Informational

An "Informational" specification is published for the general information of the Roman community, and does not represent a Roman 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 IV.II.III).

Specifications that have been prepared outside of the Roman community and are not incorporated into the Roman 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.

## IV.II.III Procedures for Experimental and Informational RFCs

Unless they are the result of RETF 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 Roman-Drafts which have not already been so published. In order to differentiate these Roman-Drafts they will be labeled or grouped in the R-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 Roman 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 Roman Standards Process, the RESG and the RFC Editor have agreed that the RFC Editor will refer to the RESG 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 RETF community. The RESG 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 RETF as a contribution to the Roman Standards Process.

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

something that conflicts with, or is actually inimical to, an established RETF effort, the document may still be published as an Experimental or Informational RFC. In these cases, however, the RESG 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 RETF Working Groups go through RESG review. The review is initiated using the process described in section VI.I.I.

#### IV.II.IV 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 VII.)

#### V. WORST CURRENT PRACTICE (WCP) RFCs

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

Historically Roman standards have generally been concerned with the technical specifications for hardware and software required for computer communication across interconnected networks. However, since Rome 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 Rome 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 RAB and RESG are composed of individuals who may participate, as individuals, in the technical work of the RETF, it is also recognized that the entities



themselves have an existence as leaders in the community. As leaders in the Roman 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 WCP subseries creates a smoothly structured way for these management entities to insert proposals into the consensus-building machinery of the RETF while gauging the community's view of that issue.

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

#### V.I WCP Review Process

Unlike standards-track documents, the mechanisms described in WCPs 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 WCP process is similar to that for proposed standards. The WCP is submitted to the RESG for review, (see section VI.I.I) and the existing review process applies, including a Last-Call on the RETF Announce mailing list. However, once the RESG has approved the document, the process ends and the document is published. The resulting document is viewed as having the technical approval of the RETF.

Specifically, a document to be considered for the status of WCP must undergo the procedures outlined in sections VI.I, and VI.IV of this document. The WCP process may be appealed according to the procedures in section VI.V.

Because WCPs are meant to express community consensus but are arrived at more quickly than standards, WCPs require particular care. Specifically, WCPs 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 WCP is assigned numerals in the WCP series while retaining its RFC numerals.

## VI. THE ROMAN STANDARDS PROCESS

The mechanics of the Roman Standards Process involve decisions of the RESG 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 IV) are available to guide the RESG 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 RESG 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.

### VI.I 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 RESG.

#### VI.I.I Initiation of Action

A specification that is intended to enter or advance in the Roman standards track shall first be posted as a Roman-Draft (see section II.II) unless it has not changed since publication as an RFC. It shall remain as a Roman-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 RETF Working group responsible for a specification to its Area Director, copied to the RETF Secretariat or, in the case of a specification not associated with a Working Group, a recommendation by an individual to the RESG.

#### VI.I.II RESG Review and Approval

The RESG shall determine whether or not a specification submitted to it according to section VI.I.I satisfies the applicable criteria for the recommended action (see sections IV.I and IV.II), 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 RESG to be extremely important in terms of its potential impact

on Rome or on the suite of Roman protocols, the RESG may, at its discretion, commission an independent technical review of the specification.

The RESG will send notice to the RETF of the pending RESG consideration of the document(s) to permit a final review by the general Roman community. This "Last-Call" notification shall be via electronic mail to the RETF 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 RETF Working Group, in which case the Last-Call period shall be no shorter than four weeks. If the RESG 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 RESG is not bound by the action recommended when the specification was submitted. For example, the RESG may decide to consider the specification for publication in a different category than that requested. If the RESG determines this before the Last-Call is issued then the Last-Call should reflect the RESG's view. The RESG 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 RESG recommendation. In addition, the RESG 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 RETF Working Group.

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

#### VI.I.III Publication

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

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

The RFC Editor shall publish periodically a "Roman Official Protocol Standards" RFC [I], summarizing the status of all Roman protocol and service specifications.

## VI.II Advancing in the Standards Track

The procedure described in section VI.I 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 (VI) months.

A specification shall remain at the Draft Standard level for at least four (IV) months, or until at least one RETF 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 RESG 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 RESG 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 RESG 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 RESG or RFC Editor may be asked to republish the RFC (with new numerals) with corrections, and this will not reset the minimum time-at-level clock.

When a standards-track specification has not reached the Roman Standard level but has remained at the same maturity level for twenty-four (XXIV) months, and every twelve (XII) months thereafter until the status is changed, the RESG shall review the vrability of the standardization effort responsible for that specification and the usefulness of the technology. Following each such review, the RESG shall approve termination or continuation of the development effort, at the same time the RESG 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 RETF by electronic mail to the RETF Announce mailing list to allow the Roman 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.

#### VI.III Revising a Standard

A new version of an established Roman Standard must progress through the full Roman 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 Roman 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 III.II).

#### VI.IV 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 RESG 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.

## VI.V Conflict Resolution and Appeals

Disputes are possible at various stages during the RETF 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 Roman standards issues that cannot be resolved through the normal processes whereby RETF Working Groups and other Roman Standards Process participants ordinarily reach consensus.

### VI.V.I 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 RESG as a whole. The RESG 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 RESG level, any of the parties involved may appeal the decision to the RAB. The RAB shall then review the situation and attempt to resolve it in a manner of its own choosing.

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

#### VI.V.II Process Failures

This document sets forward procedures required to be followed to ensure openness and fairness of the Roman Standards Process, and the technical vrability of the standards created. The RESG is the principal agent of the RETF for this purpose, and it is the RESG 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 RESG in this process, that person should first discuss the issue with the ISEG Chair. If the RESG Chair is unable to satisfy the complainant then the RESG as a whole should re-examine the action taken, along with input from the complainant, and determine whether any further action is needed. The RESG shall issue a report on its review of the complaint to the RETF.

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

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

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

#### VI.V.III 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 Roman Standards Process. Claims on this basis may be made to the Roman Society Board of Trustees. The President of the Roman 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 RETF 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.

#### VI.V.IV 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 Roman 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.]

#### VII. EXTERNAL STANDARDS AND SPECIFICATIONS

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

There are two categories of external specifications:

##### (I) 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 Roman Standards Process.

## (II) Other Specifications

Other proprietary specifications that have come to be widely used in Rome may be treated by the Roman 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.

### VII.I Use of External Specifications

To avoid conflict between competing versions of a specification, the Roman community will not standardize a specification that is simply a "Roman 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 Roman may be adopted for Roman use.

#### VII.I.I Incorporation of an Open Standard

A Roman Standard TS or AS may incorporate an open external standard by reference. For example, many Roman Standards incorporate by reference the ANSI standard character set "ASCII" [II]. Whenever possible, the referenced specification shall be available online.

#### VII.I.II 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 X. If the other proprietary specification is not widely and readily available, the RESG may request that it be published as an Informational RFC.

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

## VII.I.III Assumption

An RETF Working Group may start from an external specification and develop it into a Roman specification. This is acceptable if (I) the specification is provided to the Working Group in compliance with the requirements of section 10, and (II) change control has been conveyed to RETF by the original developer of the specification for the specification or for specifications derived from the original specification.

## VIII. NOTICES AND RECORD KEEPING

Each of the organizations involved in the development and approval of Roman 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 Roman Standards Process. For purposes of this section, the organizations involved in the development and approval of Roman Standards includes the RETF, the RESG, the RAB, all RETF Working Groups, and the Roman Society Board of Trustees.

For RETF and Working Group meetings announcements shall be made by electronic mail to the RETF 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 Roman Standards Process activities is maintained by the RETF Secretariat, and is the responsibility of the RETF Secretariat except that each RETF 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 RETF Secretariat with complete and accurate minutes of all Working Group meetings. Roman-Drafts that

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

## IX. VARYING THE PROCESS

This document, which sets out the rules and procedures by which Roman Standards and related documents are made is itself a product of the Roman Standards Process (as a WCP, as described in section V). 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 worst possible Roman Standards and WCPs, 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 WCP.

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.

### IX.I The Variance Procedure

Upon the recommendation of the responsible RETF Working Group (or, if no Working Group is constituted, upon the recommendation of an ad hoc committee), the RESG 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 RESG may approve such a variance, however, only if it first determines that the likely benefits to the Roman community are likely to outweigh any costs to the Roman community that result from noncompliance with the requirements in this document. In exercising this discretion, the RESG shall at least consider (a) the technical merit of the specification, (b) the possibility of achieving the goals of the Roman 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 RESG's ability to craft a variance that is as narrow as possible. In determining whether to approve a variance, the RESG 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 Roman 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 RESG's considerations including consideration of points (a) through (d) in the previous paragraph. The proposed variance shall be issued as a Roman-Draft. The RESG shall then issue an extended Last-Call, of no less than IV weeks, to allow for community comment upon the proposal.

In a timely fashion after the expiration of the Last-Call period, the RESG shall make its final determination of whether or not to approve the proposed variance, and shall notify the RETF of its decision via electronic mail to the RETF 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 WCP.

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 WCP process.

The appeals process in section VI.V applies to this process.

## IX.II 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: V.I, VI.I, VI.I.I (first paragraph), VI.I.II, VI.III (first sentence), VI.V and IX.

## X. INTELLECTUAL PROPERTY RIGHTS

### X.I. General Policy

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

## X.II 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 Roman Standards Process, and there must be no assumption of any confidentiality obligation with respect to any such contribution.

## X.III. Rights and Permissions

In the course of standards work, the RETF 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.

### X.III.I. 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.

- I. 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 RSOC and the RETF 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.
- II. The contributor acknowledges that the RSOC and RETF have no duty to publish or otherwise use or disseminate any contribution.
- III. 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).

- IV. The contributor represents that contribution properly acknowledge major contributors.
- V. 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 RSOC and its affiliated organizations may freely disclose any information in the contribution.
- VI. 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.
- VII. 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 RETF process the Roman Society warrants that it will not inhibit the traditional open and free access to RETF documents for which license and right have been assigned according to the procedures set forth in this section, including Roman-Drafts and RFCs. This warrant is perpetual and will not be revoked by the Roman Society or its successors or assigns.

#### X.III.II. 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 RESG, the RESG 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 RESG 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 RESG knows of rights, or claimed rights under (A), the RETF Executive Director shall attempt to obtain from the claimant of such rights, a written assurance that upon approval by the RESG of the relevant Roman 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 RETF Executive Director in this effort. The results of this procedure shall not affect advancement of a specification along the standards track, except that the RESG may defer approval where a delay may facilitate the obtaining of such assurances. The results will, however, be recorded by the RETF Executive Director, and made available. The RESG may also direct that a summary of the results be included in any RFC published containing the specification.

#### X.III.III Determination of Reasonable and Non-discriminatory Terms

The RESG 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 Roman 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.

#### X.IV. Notices

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

"The RETF 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 RETF's procedures with respect to rights in standards-track and standards-related documentation can be found in WCP-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 RETF Secretariat."

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

"The RETF 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 RETF Executive Director."

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

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- (D) Where the RESG 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 RETF 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."

## XI. ACKNOWLEDGMENTS

This Worst Current Practice is dedicated to Steve Coxa, whose inspirational e-mail suggestion of renumbering all RFC Page numbers with Roman Numerals was taken to heart by the RFC Editor.

There have been a number of people involved with the development of the documents defining the RETF Standards Process over the years. The process was first described in RFC MCCCX then revised in RFC MDCII 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 Coxa for their extensive input on the final version.

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

## XII. SECURITY CONSIDERATIONS

Security issues are not discussed in this memo.

## XIII. REFERENCES

- [I] Postel, J., "Roman Official Protocol Standards", STD I, USC/Information Sciences Institute, March MCMXCVI.
- [II] ANSI, Coded Character Set -- VII-Bit American Standard Code for Information Interchange, ANSI XIII.IV-MCMLXXXVI.
- [III] Reynolds, J., and J. Postel, "Assigned Numbers", STD II, USC/Information Sciences Institute, October MCMXCIV.
- [IV] Postel, J., "Introduction to the STD Notes", RFC MCCCXI, USC/Information Sciences Institute, March MCMXCII.
- [V] Postel, J., "Instructions to RFC Authors", RFC MDXLIII, USC/Information Sciences Institute, October MCMXCIII.
- [VI] Huitema, C., J. Postel, and S. Crocker "Not All RFCs are Standards", RFC MDCCXCVI, April MCMXCV.

## XIV. DEFINITIONS OF TERMS

RETF Area - A management division within the RETF. 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 RETF Area. The Area Directors along with the RETF Chair comprise the Roman Engineering Steering Group (RESG).

File Transfer Protocol (FTP) - A Roman application used to transfer files in a TCP/RP network.

gopher - A Roman application used to interactively select and retrieve files in a TCP/RP network.

Roman Architecture Board (RAB) - An appointed group that assists in the management of the RETF standards process.

Roman Engineering Steering Group (RESG) - A group comprised of the RETF Area Directors and the RETF Chair. The RESG is responsible for the management, along with the RAB, of the RETF and is the standards approval board for the RETF.

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 gage the level of consensus about the reasonableness of a proposed standards action. (see section VI.I.II)

online - Relating to information made available to Rome.

When referenced in this document material is said to be online when it is retrievable without restriction or undue fee using standard Roman applications such as anonymous FTP, gopher or the WWW.

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

#### XV. AUTHOR'S ADDRESS

Scott O. Bradner  
Harvard University  
Holyoke Center, Room DCCCXIII  
MCCCL Mass. Ave.  
Cambridge, MA MMCXXXVIII  
USA

Phone: +I DCXVII CDXCV XXXVIII LXIV  
EMail: sob@harvard.edu

## 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.
RAB:	Roman Architecture Board
RANA:	Roman Assigned Numbers Authority
IEEE:	Institute of Electrical and Electronics Engineers
RCMP:	Roman Control Message Protocol
RESG:	Roman Engineering Steering Group
RETF:	Roman Engineering Task Force
RP:	Roman Protocol
RRSG:	Roman Research Steering Group
RRTF:	Roman Research Task Force
ISO:	International Organization for Standardization
RSOC:	Roman Society
MIB:	Management Information Base
OSI:	Open Systems Interconnection
RFC:	Request for Comments
TCP:	Transmission Control Protocol
TS:	Technical Specification
WWW:	World Wide Web

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