Guidelines for the Definition of New Top Level Media Types

Abstract

   The goal of this document is to identify best practices for defining
   new top-level media types. It updates RFC 6838 [RFC6838], when
   approved. Comments and discussion about this document should be
   directed to media-types@ietf.org, the mailing list of the Media Type
   Maintenance (mediaman) WG.

Status of This Memo

   This Internet-Draft is submitted in full conformance with the
   provisions of BCP 78 and BCP 79.

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   material or to cite them other than as "work in progress."

   This Internet-Draft will expire on 7 September 2022.

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1. Introduction

This document defines best practices for defining new top-level
media types. RFC 6838 [RFC6838] very consisely defines the
conditions for defining additional top-level media types. This
document expands this and therefore updates RFC 6838 [RFC6838].

This document is currently a personal draft, but is intended for
adoption by the Media Type Maintenance (mediaman) IETF WG. Comments
and discussion about this document should be directed to that WG's
mailing list at media-types@ietf.org.

Currently, this document is a collection of information, ideas, and
text snippets that may be helpful in creating the actual
specification. None of the current language is intended to be final.

1.1. Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
"SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
document are to be interpreted as described in RFC 2119 [RFC2119].

2. Top-Level Media Type History

This section shortly describes the history of top-level media types,
with a particular emphasis on the (rather rare) adoption of new top-
level types.

RFC 1341 [RFC1341] first defined the structuring of content types
into (top-level) type and subtype, and introduced the 'text',
'multipart', 'message', 'image', 'audio', 'video', and 'application'
top-level types. That specification also allowed top-level types

starting with 'X-'. With respect to new top-level types, it said the following:

> An initial set of seven Content-Types is defined by this document. This set of top-level names is intended to be substantially complete. It is expected that additions to the larger set of supported types can generally be accomplished by the creation of new subtypes of these initial types. In the future, more top-level types may be defined only by an extension to this standard. If another primary type is to be used for any reason, it must be given a name starting with "X-" to indicate its non-standard status and to avoid a potential conflict with a future official name.

The first time an additional top-level type was defined was in RFC 1437 [RFC1437], but this was purely for entertainment purposes (please check date).

RFC 2046 [RFC2046] discouraged the use of "X-" for (new) top-level types, with the following words:

> In general, the use of "X-" top-level types is strongly discouraged. Implementors should invent subtypes of the existing types whenever possible. In many cases, a subtype of "application" will be more appropriate than a new top-level type.

RFC 2048 [RFC2048], published at the same time as RFC 2046 [RFC2046], defined requirements for the definition of new top-level types:

> In some cases a new media type may not "fit" under any currently defined top-level content type. Such cases are expected to be quite rare. However, if such a case arises a new top-level type can be defined to accommodate it. Such a definition must be done via standards-track RFC; no other mechanism can be used to define additional top-level content types.

>RFC 4735 [RFC4735] introduced the 'example' top-level type for use in documentation examples.

At some point, the 'model' top-level type was introduced. Any pointers to the defining document are greatly appreciated.

The 'font' top-level media type was defined in RFC 8081 [RFC8081], a work of the 'justfont' IETF WG, in 2017.

There is ongoing work on defining a new 'haptics' top-level media type in draft-ietf-mediaman-haptics [HAPTICS].

Wikipedia (at https://en.wikipedia.org/wiki/Media_type) reports the unofficial use of a 'chemical' top-level type.

The document currently defining the requirements for new top-level media types is RFC 6838 [RFC6838]. Because we are trying to update what it says, we are citing the two relevant sections, Section 4.2.5 and Section 4.2.7, here.

4.2.5. Application Media Types

The "application" top-level type is to be used for discrete data that do not fit under any of the other type names, and particularly for data to be processed by some type of application program. This is information that must be processed by an application before it is viewable or usable by a user. Expected uses for the "application" type name include but are not limited to file transfer, spreadsheets, presentations, scheduling data, and languages for "active" (computational) material. (The last, in particular, can pose security problems that must be understood by implementors. The "application/postscript" media type registration in [RFC2046] provides a good example of how to handle these issues.)

For example, a meeting scheduler might define a standard representation for information about proposed meeting dates. An intelligent user agent would use this information to conduct a dialog with the user, and might then send additional material based on that dialog. More generally, there have been several "active" languages developed in which programs in a suitably specialized language are transported to a remote location and automatically run in the recipient's environment. Such applications may be defined as subtypes of the "application" top-level type.

The subtype of "application" will often either be the name or include part of the name of the application for which the data are intended. This does not mean, however, that any application program name may simply be used freely as a subtype of "application"; the subtype needs to be registered.

4.2.7. Additional Top-Level Types

In some cases, a new media type may not "fit" under any currently defined top-level type names. Such cases are expected to be quite rare. However, if such a case does arise, a new type name can be defined to accommodate it. Definition of a new top-level type name MUST be done via a Standards Track RFC; no other mechanism can be used to define additional type names.

The two sections above are not strictly aligned, because the first says anything that doesn't go under a more specific type can go under the 'application' top-level type, while the later section allows for new top-level types.

3. Potential Criteria for New Top-Level Media Types

This section describes potential criteria for new top-level media
types, including criteria already defined in RFC 6838 [RFC6838].
Further work is needed to distinguish between required and optional
criteria. But it is possible that we end up with just "we didn't
find any objective criteria for new top-level types, and we will
stop looking for such criteria".

   *New top level types are rare enough and different enough that
    each application needs to be evaluated separately.

   *Need to be documented in a Standards Track RFC.

   *This Standards Track RFC should include initial registrations of
    actual types.

   *May (or may not) need an IETF WG for definition.

   *Existence of a certain number of subtypes that would be grouped
    under the new top-level type. At a minimum, one actual subtype
    should exist. But the existence of a single subtype should not be
    enough; it should be clear that new similar types may appear in
    the future.

   *Existing wide use of an undefined top-level type may be an
    indication of a need, and therefore an argument for formally
    defining this new top-level type.

   *On the other hand, the use of undefined top-level types is highly
    discouraged.

   *Top-level types mostly help humans; it is unclear to what extent
    top-level types are used by applications directly, as opposed to
    application dispatching and behavior triggered by the type/
    subtype combination. [More information needed/appreciated here.]
    Therefore, evaluating how a new top-level type helps humans
    understand types may be crucial. But as often with humans,
    opinions may widely differ.

   *Need for clear criteria for what types do and don't fall under
    the new top-level type.

   *Desirability for common parameters: The fact that a group of
    (potential) types have (mostly) common parameters may be an
    indication that these belong under a common (new) top-level type.

4. IANA Considerations

   There is currently no registry of top-level media types, but the
   list of top-level types available for registering subtypes is
   available at https://www.iana.org/assignments/media-types/media-
   types.xhtml.

   There may be a question of whether there is a need for a formal
   registry of top-level types. Such a registry might contain pointers
   to the definitions of the top-level types. As a concrete example,
   the author of this document has not yet been able to find the
   definition of the 'model' top level type.

5. Security Considerations

   This document as such is not expected to introduce any security
   issues. The security issues of introducing a new top-level media
   type MUST be evaluated and documented carefully.

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