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vCard MIME Directory Profile

Status of this Memo

Copyright Notice

Abstract

This memo defines the profile of the MIME Content-Type [MIME-DIR] for directory information for a white-pages person object, based on a vCard electronic business card. The profile definition is independent of any particular directory service or protocol. The profile is defined for representing and exchanging a variety of information about an individual (e.g., formatted and structured name and delivery addresses, email address, multiple telephone numbers, photograph, logo, audio clips, etc.). The directory information used by this profile is based on the attributes for the person object defined in the X.520 and X.521 directory services recommendations. The profile also provides the method for including a [VCARD] representation of a white-pages directory entry within the MIME Content-Type defined by the [MIME-DIR] document.

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].

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Overview

The [MIME-DIR] document defines a MIME Content-Type for holding different kinds of directory information. The directory information can be based on any of a number of directory schemas. This document defines a [MIME-DIR] usage profile for conveying directory information based on one such schema; that of the white-pages type of person object.

The schema is based on the attributes for the person object defined in the X.520 and X.521 directory services recommendations. The schema has augmented the basic attributes defined in the X.500 series recommendation in order to provide for an electronic representation of the information commonly found on a paper business card. This schema was first defined in the [VCARD] document. Hence, this [MIME-DIR] profile is referred to as the vCard MIME Directory Profile.

A directory entry based on this usage profile can include traditional directory, white-pages information such as the distinguished name used to uniquely identify the entry, a formatted representation of the name used for user-interface or presentation purposes, both the structured and presentation form of the delivery address, various telephone numbers and organizational information associated with the entry. In addition, traditional paper business card information such as an image of an organizational logo or identify photograph can be included in this person object.

The vCard MIME Directory Profile also provides support for representing other important information about the person associated with the directory entry. For instance, the date of birth of the person; an audio clip describing the pronunciation of the name associated with the directory entry, or some other application of the

digital sound; longitude and latitude geo-positioning information related to the person associated with the directory entry; date and time that the directory information was last updated; annotations often written on a business card; Uniform Resource Locators (URL) for a website; public key information. The profile also provides support for non-standard extensions to the schema. This provides the flexibility for implementations to augment the current capabilities of the profile in a standardized way. More information about this electronic business card format can be found in [VCARD].

1. The vCard Mime Directory Profile Registration

This profile is identified by the following [MIME-DIR] registration template information. Subsequent sections define the profile definition.

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME profile VCARD

Profile name: VCARD

Profile purpose: To hold person object or white-pages type of directory information. The person schema captured in the directory entries is that commonly found in an electronic business card.

Predefined MIME Directory value specifications used: uri, date, date-time, float

New value specifications: This profile places further constraints on the [MIME-DIR] text value specification. In addition, it adds a binary, phone-number, utc-offset and vcard value specifications.

Predefined MIME Directory types used: SOURCE, NAME, PROFILE, BEGIN, END.

Predefined MIME Directory parameters used: ENCODING, VALUE, CHARSET, LANGUAGE, CONTEXT.

New types: FN, N, NICKNAME, PHOTO, BDAY, ADR, LABEL, TEL, EMAIL, MAILER, TZ, GEO, TITLE, ROLE, LOGO, AGENT, ORG, CATEGORIES, NOTE, PRODID, REV, SORT-STRING, SOUND, URL, UID, VERSION, CLASS, KEY

New parameters: TYPE

Profile special notes: The vCard object MUST contain the FN, N and VERSION types. The type-grouping feature of [MIME-DIR] is supported by this profile to group related vCard properties about a directory

entry. For example, vCard properties describing WORK or HOME related characteristics can be grouped with a unique group label.

The profile permits the use of non-standard types (i.e., those identified with the prefix string "X-") as a flexible method for implementations to extend the functionality currently defined within this profile.

2. MIME Directory Features

The vCard MIME Directory Profile makes use of many of the features defined by [MIME-DIR]. The following sections either clarify or extend the content-type definition of [MIME-DIR].

2.1 Predefined Type Usage

The vCard MIME Directory Profile uses the following predefined types from [MIME-DIR].

2.1.1 BEGIN and END Type

The content entity MUST begin with the BEGIN type with a value of "VCARD". The content entity MUST end with the END type with a value of "VCARD".

2.1.2 NAME Type

If the NAME type is present, then its value is the displayable, presentation text associated with the source for the vCard, as specified in the SOURCE type.

2.1.3 PROFILE Type

If the PROFILE type is present, then its value MUST be "VCARD".

2.1.4 SOURCE Type

If the SOURCE type is present, then its value provides information how to find the source for the vCard.

2.2 Predefined Type Parameter Usage

The vCard MIME Directory Profile uses the following predefined type parameters as defined by [MIME-DIR].

- LANGUAGE
- ENCODING
- VALUE

2.3 Predefined VALUE Type Usage

The predefined data type values specified in [MIME-DIR] MUST NOT be repeated in COMMA separated value lists except within the N, NICKNAME, ADR and CATEGORIES value types.

The text value type defined in [MIME-DIR] is further restricted such that any SEMI-COLON character (ASCII decimal 59) in the value MUST be escaped with the BACKSLASH character (ASCII decimal 92).

2.4 Extensions To The Predefined VALUE Types

The predefined data type values specified in [MIME-DIR] have been extended by the vCard profile to include a number of value types that are specific to this profile.

2.4.1 BINARY

The "binary" value type specifies that the type value is inline, encoded binary data. This value type can be specified in the PHOTO, LOGO, SOUND, and KEY types.

If inline encoded binary data is specified, the ENCODING type parameter MUST be used to specify the encoding format. The binary data MUST be encoded using the "B" encoding format. Long lines of encoded binary data SHOULD BE folded to 75 characters using the folding method defined in [MIME-DIR].

The value type is defined by the following notation:

binary = <A "B" binary encoded string as defined by [RFC 2047].>

2.4.2 VCARD

The "vcard" value type specifies that the type value is another vCard. This value type can be specified in the AGENT type. The value type is defined by this specification. Since each of the type

declarations with in the vcard value type are being specified within a text value themselves, they MUST be terminated with the backslash escape sequence "\n" or "\N", instead of the normal newline character sequence CRLF. In addition, any COMMA character (ASCII decimal 44), SEMI-COLON character (ASCII decimal 59) and COLON character (ASCII decimal 58) MUST be escaped with the BACKSLASH character (ASCII decimal 92). For example, with the AGENT type a value would be specified as:

```
AGENT:BEGIN:VCARD\nFN:Joe Friday\nTEL:+1-919-555-7878\n
 TITLE:Area Administrator\, Assistant\n EMAIL\;TYPE=INTERN\n
 ET:jfriday@host.com\nEND:VCARD\n
```

2.4.3 PHONE-NUMBER

The "phone-number" value type specifies that the type value is a telephone number. This value type can be specified in the TEL type. The value type is a text value that has the special semantics of a telephone number as defined in [CCITT E.163] and [CCITT X.121].

2.4.4 UTC-OFFSET

The "utc-offset" value type specifies that the type value is a signed offset from UTC. This value type can be specified in the TZ type.

The value type is an offset from Coordinated Universal Time (UTC). It is specified as a positive or negative difference in units of hours and minutes (e.g., +hh:mm). The time is specified as a 24-hour clock. Hour values are from 00 to 23, and minute values are from 00 to 59. Hour and minutes are 2-digits with high order zeroes required to maintain digit count. The extended format for ISO 8601 UTC offsets MUST be used. The extended format makes use of a colon character as a separator of the hour and minute text fields.

The value is defined by the following notation:

```
time-hour       = 2DIGIT        ;00-23
time-minute     = 2DIGIT        ;00-59
utc-offset      = ("+" / "-") time-hour ":" time-minute
```

2.5 Structured Type Values

Compound type values are delimited by a field delimiter, specified by the SEMI-COLON character (ASCII decimal 59). A SEMI-COLON in a component of a compound property value MUST be escaped with a BACKSLASH character (ASCII decimal 92).

Lists of values are delimited by a list delimiter, specified by the COMMA character (ASCII decimal 44). A COMMA character in a value MUST be escaped with a BACKSLASH character (ASCII decimal 92).

This profile supports the type grouping mechanism defined in [MIME-DIR]. Grouping of related types is a useful technique to communicate common semantics concerning the properties of a vCard.

2.6 Line Delimiting and Folding

This profile supports the same line delimiting and folding methods defined in [MIME-DIR]. Specifically, when parsing a content line, folded lines must first be unfolded according to the unfolding procedure described in [MIME-DIR]. After generating a content line, lines longer than 75 characters SHOULD be folded according to the folding procedure described in [MIME DIR].

Folding is done after any content encoding of a type value. Unfolding is done before any decoding of a type value in a content line.

3. vCard Profile Features

The vCard MIME Directory Profile Type contains directory information, typically pertaining to a single directory entry. The information is described using an attribute schema that is tailored for capturing personal contact information. The vCard can include attributes that describe identification, delivery addressing, telecommunications addressing, geographical, organizational, general explanatory and security and access information about the particular object associated with the vCard.

3.1 Identification Types

These types are used in the vCard profile to capture information associated with the identification and naming of the person or resource associated with the vCard.

3.1.1 FN Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type FN

Type name:FN

Type purpose: To specify the formatted text corresponding to the name of the object the vCard represents.

Type encoding: 8bit

Type value: A single text value.

Type special notes: This type is based on the semantics of the X.520 Common Name attribute. The property MUST be present in the vCard object.

Type example:

FN:Mr. John Q. Public\, Esq.

3.1.2 N Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type N

Type name: N

Type purpose: To specify the components of the name of the object the vCard represents.

Type encoding: 8bit

Type value: A single structured text value. Each component can have multiple values.

Type special note: The structured type value corresponds, in sequence, to the Family Name, Given Name, Additional Names, Honorific Prefixes, and Honorific Suffixes. The text components are separated by the SEMI-COLON character (ASCII decimal 59). Individual text components can include multiple text values (e.g., multiple Additional Names) separated by the COMMA character (ASCII decimal 44). This type is based on the semantics of the X.520 individual name attributes. The property MUST be present in the vCard object.

Type example:

N:Public;John;Quinlan;Mr.;Esq.

N:Stevenson;John;Philip,Paul;Dr.;Jr.,M.D.,A.C.P.

3.1.3 NICKNAME Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type NICKNAME

Type name: NICKNAME

Type purpose: To specify the text corresponding to the nickname of the object the vCard represents.

Type encoding: 8bit

Type value: One or more text values separated by a COMMA character (ASCII decimal 44).

Type special note: The nickname is the descriptive name given instead of or in addition to the one belonging to a person, place, or thing. It can also be used to specify a familiar form of a proper name specified by the FN or N types.

Type example:

NICKNAME:Robbie

NICKNAME:Jim,Jimmie

3.1.4 PHOTO Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type PHOTO

Type name: PHOTO

Type purpose: To specify an image or photograph information that annotates some aspect of the object the vCard represents.

Type encoding: The encoding MUST be reset to "b" using the ENCODING parameter in order to specify inline, encoded binary data. If the value is referenced by a URI value, then the default encoding of 8bit is used and no explicit ENCODING parameter is needed.

Type value: A single value. The default is binary value. It can also be reset to uri value. The uri value can be used to specify a value outside of this MIME entity.

Type special notes: The type can include the type parameter "TYPE" to specify the graphic image format type. The TYPE parameter values MUST be one of the IANA registered image formats or a non-standard image format.

Type example:

```
PHOTO;VALUE=uri:http://www.abc.com/pub/photos
 /jqpublic.gif


PHOTO;ENCODING=b;TYPE=JPEG:MIICajCCAdOgAwIBAgICBEUwDQYJKoZIhvcN
 AQEEBQAwdzELMAkGA1UEBhMCVVMxLDAqBgNVBAoTI05ldHNjYXBlIENvbW11bm
 ljYXRpb25zIENvcnBvcmF0aW9uMRwwGgYDVQQLExNJbmZvcm1hdGlvbiBTeXN0
 <...remainder of "B" encoded binary data...>
```

3.1.5 BDAY Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type BDAY

Type name: BDAY

Type purpose: To specify the birth date of the object the vCard represents.

Type encoding: 8bit

Type value: The default is a single date value. It can also be reset to a single date-time value.

Type examples:

```
BDAY:1996-04-15

BDAY:1953-10-15T23:10:00Z

BDAY:1987-09-27T08:30:00-06:00
```

3.2 Delivery Addressing Types

These types are concerned with information related to the delivery addressing or label for the vCard object.

3.2.1 ADR Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type ADR

Type name: ADR

Type purpose: To specify the components of the delivery address for the vCard object.

Type encoding: 8bit

Type value: A single structured text value, separated by the SEMI-COLON character (ASCII decimal 59).

Type special notes: The structured type value consists of a sequence of address components. The component values MUST be specified in their corresponding position. The structured type value corresponds, in sequence, to the post office box; the extended address; the street address; the locality (e.g., city); the region (e.g., state or province); the postal code; the country name. When a component value is missing, the associated component separator MUST still be specified.

The text components are separated by the SEMI-COLON character (ASCII decimal 59). Where it makes semantic sense, individual text components can include multiple text values (e.g., a "street" component with multiple lines) separated by the COMMA character (ASCII decimal 44).

The type can include the type parameter "TYPE" to specify the delivery address type. The TYPE parameter values can include "dom" to indicate a domestic delivery address; "intl" to indicate an international delivery address; "postal" to indicate a postal delivery address; "parcel" to indicate a parcel delivery address; "home" to indicate a delivery address for a residence; "work" to indicate delivery address for a place of work; and "pref" to indicate the preferred delivery address when more than one address is specified. These type parameter values can be specified as a parameter list (i.e., "TYPE=dom;TYPE=postal") or as a value list (i.e., "TYPE=dom,postal"). This type is based on semantics of the X.520 geographical and postal addressing attributes. The default is "TYPE=intl,postal,parcel,work". The default can be overridden to some other set of values by specifying one or more alternate values. For example, the default can be reset to "TYPE=dom,postal,work,home" to specify a domestic delivery address for postal delivery to a residence that is also used for work.

Type example: In this example the post office box and the extended address are absent.

```
ADR;TYPE=dom,home,postal,parcel:;;123 Main
  Street;Any Town;CA;91921-1234
```

3.2.2 LABEL Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type LABEL

Type name: LABEL

Type purpose: To specify the formatted text corresponding to delivery address of the object the vCard represents.

Type encoding: 8bit

Type value: A single text value.

Type special notes: The type value is formatted text that can be used to present a delivery address label for the vCard object. The type can include the type parameter "TYPE" to specify delivery label type. The TYPE parameter values can include "dom" to indicate a domestic delivery label; "intl" to indicate an international delivery label; "postal" to indicate a postal delivery label; "parcel" to indicate a parcel delivery label; "home" to indicate a delivery label for a residence; "work" to indicate delivery label for a place of work; and "pref" to indicate the preferred delivery label when more than one label is specified. These type parameter values can be specified as a parameter list (i.e., "TYPE=dom;TYPE=postal") or as a value list (i.e., "TYPE=dom,postal"). This type is based on semantics of the X.520 geographical and postal addressing attributes. The default is "TYPE=intl,postal,parcel,work". The default can be overridden to some other set of values by specifying one or more alternate values. For example, the default can be reset to "TYPE=intl,post,parcel,home" to specify an international delivery label for both postal and parcel delivery to a residential location.

Type example: A multi-line address label.

```
LABEL;TYPE=dom,home,postal,parcel:Mr.John Q. Public\, Esq.\n
 Mail Drop: TNE QB\n123 Main Street\nAny Town\, CA  91921-1234
 \nU.S.A.
```

3.3 Telecommunications Addressing Types

These types are concerned with information associated with the telecommunications addressing of the object the vCard represents.

3.3.1 TEL Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type TEL

Type name: TEL

Type purpose: To specify the telephone number for telephony communication with the object the vCard represents.

Type encoding: 8bit

Type value: A single phone-number value.

Type special notes: The value of this type is specified in a canonical form in order to specify an unambiguous representation of the globally unique telephone endpoint. This type is based on the X.500 Telephone Number attribute.

The type can include the type parameter "TYPE" to specify intended use for the telephone number. The TYPE parameter values can include: "home" to indicate a telephone number associated with a residence, "msg" to indicate the telephone number has voice messaging support, "work" to indicate a telephone number associated with a place of work, "pref" to indicate a preferred-use telephone number, "voice" to indicate a voice telephone number, "fax" to indicate a facsimile telephone number, "cell" to indicate a cellular telephone number, "video" to indicate a video conferencing telephone number, "pager" to indicate a paging device telephone number, "bbs" to indicate a bulletin board system telephone number, "modem" to indicate a MODEM connected telephone number, "car" to indicate a car-phone telephone number, "isdn" to indicate an ISDN service telephone number, "pcs" to indicate a personal communication services telephone number. The default type is "voice". These type parameter values can be specified as a parameter list (i.e., "TYPE=work;TYPE=voice") or as a value list (i.e., "TYPE=work,voice"). The default can be overridden to another set of values by specifying one or more alternate values. For example, the default TYPE of "voice" can be reset to a WORK and HOME, VOICE and FAX telephone number by the value list "TYPE=work,home,voice,fax".

Type example:

```
TEL;TYPE=work,voice,pref,msg:+1-213-555-1234
```

3.3.2 EMAIL Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type EMAIL

Type name: EMAIL

Type purpose: To specify the electronic mail address for communication with the object the vCard represents.

Type encoding: 8bit

Type value: A single text value.

Type special notes: The type can include the type parameter "TYPE" to specify the format or preference of the electronic mail address. The TYPE parameter values can include: "internet" to indicate an Internet addressing type, "x400" to indicate a X.400 addressing type or "pref" to indicate a preferred-use email address when more than one is specified. Another IANA registered address type can also be specified. The default email type is "internet". A non-standard value can also be specified.

Type example:

```
EMAIL;TYPE=internet:jqpublic@xyz.dom1.com

EMAIL;TYPE=internet:jdoe@isp.net

EMAIL;TYPE=internet,pref:jane_doe@abc.com
```

3.3.3 MAILER Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type MAILER

Type name: MAILER

Type purpose: To specify the type of electronic mail software that is used by the individual associated with the vCard.

Type encoding: 8bit

Type value: A single text value.

Type special notes: This information can provide assistance to a correspondent regarding the type of data representation which can be used, and how they can be packaged. This property is based on the private MIME type X-Mailer that is generally implemented by MIME user agent products.

Type example:

```
MAILER:PigeonMail 2.1
```

3.4 Geographical Types

These types are concerned with information associated with geographical positions or regions associated with the object the vCard represents.

3.4.1 TZ Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type TZ

Type name: TZ

Type purpose: To specify information related to the time zone of the object the vCard represents.

Type encoding: 8bit

Type value: The default is a single utc-offset value. It can also be reset to a single text value.

Type special notes: The type value consists of a single value.

Type examples:

```
TZ:-05:00

TZ;VALUE=text:-05:00; EST; Raleigh/North America
;This example has a single value, not a structure text value.
```

3.4.2 GEO Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type GEO

Type name: GEO

Type purpose: To specify information related to the global positioning of the object the vCard represents.

Type encoding: 8bit

Type value: A single structured value consisting of two float values separated by the SEMI-COLON character (ASCII decimal 59).

Type special notes: This type specifies information related to the global position of the object associated with the vCard. The value specifies latitude and longitude, in that order (i.e., "LAT LON" ordering). The longitude represents the location east and west of the prime meridian as a positive or negative real number, respectively. The latitude represents the location north and south of the equator as a positive or negative real number, respectively. The longitude and latitude values MUST be specified as decimal degrees and should be specified to six decimal places. This will allow for granularity within a meter of the geographical position. The text components are separated by the SEMI-COLON character (ASCII decimal 59). The simple formula for converting degrees-minutes-seconds into decimal degrees is:

decimal = degrees + minutes/60 + seconds/3600.

Type example:

GEO:37.386013;-122.082932

3.5 Organizational Types

These types are concerned with information associated with characteristics of the organization or organizational units of the object the vCard represents.

3.5.1 TITLE Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type TITLE

Type name: TITLE

Type purpose: To specify the job title, functional position or function of the object the vCard represents.

Type encoding: 8bit

Type value: A single text value.

Type special notes: This type is based on the X.520 Title attribute.

Type example:

```
TITLE:Director\, Research and Development
```

3.5.2 ROLE Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type ROLE

Type name: ROLE

Type purpose: To specify information concerning the role, occupation, or business category of the object the vCard represents.

Type encoding: 8bit

Type value: A single text value.

Type special notes: This type is based on the X.520 Business Category explanatory attribute. This property is included as an organizational type to avoid confusion with the semantics of the TITLE type and incorrect usage of that type when the semantics of this type is intended.

Type example:

```
ROLE:Programmer
```

3.5.3 LOGO Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type LOGO

Type name: LOGO

Type purpose: To specify a graphic image of a logo associated with the object the vCard represents.

Type encoding: The encoding MUST be reset to "b" using the ENCODING parameter in order to specify inline, encoded binary data. If the value is referenced by a URI value, then the default encoding of 8bit is used and no explicit ENCODING parameter is needed.

Type value: A single value. The default is binary value. It can also be reset to uri value. The uri value can be used to specify a value outside of this MIME entity.

Type special notes: The type can include the type parameter "TYPE" to specify the graphic image format type. The TYPE parameter values MUST be one of the IANA registered image formats or a non-standard image format.

Type example:

```
LOGO;VALUE=uri:http://www.abc.com/pub/logos/abccorp.jpg

LOGO;ENCODING=b;TYPE=JPEG:MIICajCCAdOgAwIBAgICBEUwDQYJKoZIhvcN
 AQEEBQAwdzELMAkGA1UEBhMCVVMxLDAqBgNVBAoTI05ldHNjYXBlIENvbW11bm
 ljYXRpb25zIENvcnBvcmF0aW9uMRwwGgYDVQQLExNJbmZvcm1hdGlvbiBTeXN0
 <...the remainder of "B" encoded binary data...>
```

3.5.4 AGENT Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type AGENT

Type name: AGENT

Type purpose: To specify information about another person who will act on behalf of the individual or resource associated with the vCard.

Type encoding: 8-bit

Type value: The default is a single vcard value. It can also be reset to either a single text or uri value. The text value can be used to specify textual information. The uri value can be used to specify information outside of this MIME entity.

Type special notes: This type typically is used to specify an area administrator, assistant, or secretary for the individual associated with the vCard. A key characteristic of the Agent type is that it represents somebody or something that is separately addressable.

Type example:

```
AGENT;VALUE=uri:
 CID:JQPUBLIC.part3.960129T083020.xyzMail@host3.com
```

```
AGENT:BEGIN:VCARD\nFN:Susan Thomas\nTEL:+1-919-555-
 1234\nEMAIL\;INTERNET:sthomas@host.com\nEND:VCARD\n
```

3.5.5 ORG Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type ORG

Type name: ORG

Type purpose: To specify the organizational name and units associated with the vCard.

Type encoding: 8bit

Type value: A single structured text value consisting of components separated the SEMI-COLON character (ASCII decimal 59).

Type special notes: The type is based on the X.520 Organization Name and Organization Unit attributes. The type value is a structured type consisting of the organization name, followed by one or more levels of organizational unit names.

Type example: A type value consisting of an organizational name, organizational unit #1 name and organizational unit #2 name.

```
ORG:ABC\, Inc.;North American Division;Marketing
```

3.6 Explanatory Types

These types are concerned with additional explanations, such as that related to informational notes or revisions specific to the vCard.

3.6.1 CATEGORIES Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type CATEGORIES

Type name: CATEGORIES

Type purpose: To specify application category information about the vCard.

Type encoding: 8bit

Type value: One or more text values separated by a COMMA character (ASCII decimal 44).

Type example:

```
CATEGORIES:TRAVEL AGENT

CATEGORIES:INTERNET,IETF,INDUSTRY,INFORMATION TECHNOLOGY
```

3.6.2 NOTE Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type NOTE

Type name: NOTE

Type purpose: To specify supplemental information or a comment that is associated with the vCard.

Type encoding: 8bit

Type value: A single text value.

Type special notes: The type is based on the X.520 Description attribute.

Type example:

```
NOTE:This fax number is operational 0800 to 1715
  EST\, Mon-Fri.
```

3.6.3 PRODID Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type PRODID

Type name: PRODID

Type purpose: To specify the identifier for the product that created the vCard object.

Type encoding: 8-bit

Type value: A single text value.

Type special notes: Implementations SHOULD use a method such as that specified for Formal Public Identifiers in ISO 9070 to assure that the text value is unique.

Type example:

PRODID:-//ONLINE DIRECTORY//NONSGML Version 1//EN

3.6.4 REV Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type REV

Type name: REV

Type purpose: To specify revision information about the current vCard.

Type encoding: 8-bit

Type value: The default is a single date-time value. Can also be reset to a single date value.

Type special notes: The value distinguishes the current revision of the information in this vCard for other renditions of the information.

Type example:

REV:1995-10-31T22:27:10Z

REV:1997-11-15

3.6.5 SORT-STRING Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type SORT-STRING

Type Name: SORT-STRING

Type purpose: To specify the family name or given name text to be used for national-language-specific sorting of the FN and N types.

Type encoding: 8bit

Type value: A single text value.

Type special notes: The sort string is used to provide family name or given name text that is to be used in locale- or national-language-specific sorting of the formatted name and structured name types. Without this information, sorting algorithms could incorrectly sort this vCard within a sequence of sorted vCards. When this type is present in a vCard, then this family name or given name value is used for sorting the vCard.

Type examples: For the case of family name sorting, the following examples define common sort string usage with the FN and N types.

```
FN:Rene van der Harten
N:van der Harten;Rene;J.;Sir;R.D.O.N.
SORT-STRING:Harten

FN:Robert Pau Shou Chang
N:Pau;Shou Chang;Robert
SORT-STRING:Pau

FN:Osamu Koura
N:Koura;Osamu
SORT-STRING:Koura

FN:Oscar del Pozo
N:del Pozo Triscon;Oscar
SORT-STRING:Pozo

FN:Chistine d’Aboville
N:d’Aboville;Christine
SORT-STRING:Aboville
```

3.6.6 SOUND Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type SOUND

Type name: SOUND

Type purpose: To specify a digital sound content information that annotates some aspect of the vCard. By default this type is used to specify the proper pronunciation of the name type value of the vCard.

Type encoding: The encoding MUST be reset to "b" using the ENCODING parameter in order to specify inline, encoded binary data. If the value is referenced by a URI value, then the default encoding of 8bit is used and no explicit ENCODING parameter is needed.

Type value: A single value. The default is binary value. It can also be reset to uri value. The uri value can be used to specify a value outside of this MIME entity.

Type special notes: The type can include the type parameter "TYPE" to specify the audio format type. The TYPE parameter values MUST be one of the IANA registered audio formats or a non-standard audio format.

Type example:

```
SOUND;TYPE=BASIC;VALUE=uri:CID:JOHNQPUBLIC.part8.
 19960229T080000.xyzMail@host1.com

SOUND;TYPE=BASIC;ENCODING=b:MIICajCCAdOgAwIBAgICBEUwDQYJKoZIhvcN
 AQEEBQAwdzELMAkGA1UEBhMCVVMxLDAqBgNVBAoTI05ldHNjYXBlIENvbW11bm
 ljYXRpb25zIENvcnBvcmF0aW9uMRwwGgYDVQQLExNJbmZvcm1hdGlvbiBTeXN0
 <...the remainder of "B" encoded binary data...>
```

3.6.7 UID Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type UID

Type name: UID

Type purpose: To specify a value that represents a globally unique identifier corresponding to the individual or resource associated with the vCard.

Type encoding: 8bit

Type value: A single text value.

Type special notes: The type is used to uniquely identify the object that the vCard represents.

The type can include the type parameter "TYPE" to specify the format of the identifier. The TYPE parameter value should be an IANA registered identifier format. The value can also be a non-standard format.

Type example:

```
UID:19950401-080045-40000F192713-0052
```

3.6.8 URL Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type URL

Type name: URL

Type purpose: To specify a uniform resource locator associated with the object that the vCard refers to.

Type encoding: 8bit

Type value: A single uri value.

Type example:

```
URL:http://www.swbyps.restaurant.french/~chezchic.html
```

3.6.9 VERSION Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type VERSION

Type name: VERSION

Type purpose: To specify the version of the vCard specification used to format this vCard.

Type encoding: 8bit

Type value: A single text value.

Type special notes: The property MUST be present in the vCard object. The value MUST be "3.0" if the vCard corresponds to this specification.

Type example:

```
VERSION:3.0
```

3.7 Security Types

These types are concerned with the security of communication pathways or access to the vCard.

3.7.1 CLASS Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type CLASS

Type name: CLASS

Type purpose: To specify the access classification for a vCard object.

Type encoding: 8bit

Type value: A single text value.

Type special notes: An access classification is only one component of the general security model for a directory service. The classification attribute provides a method of capturing the intent of the owner for general access to information described by the vCard object.

Type examples:

CLASS:PUBLIC

CLASS:PRIVATE

CLASS:CONFIDENTIAL

3.7.2 KEY Type Definition

To: ietf-mime-directory@imc.org

Subject: Registration of text/directory MIME type KEY

Type name: KEY

Type purpose: To specify a public key or authentication certificate associated with the object that the vCard represents.

Type encoding: The encoding MUST be reset to "b" using the ENCODING parameter in order to specify inline, encoded binary data. If the value is a text value, then the default encoding of 8bit is used and no explicit ENCODING parameter is needed.

Type value: A single value. The default is binary. It can also be reset to text value. The text value can be used to specify a text key.

Type special notes: The type can also include the type parameter TYPE to specify the public key or authentication certificate format. The parameter type should specify an IANA registered public key or authentication certificate format. The parameter type can also specify a non-standard format.

Type example:

```
KEY;ENCODING=b:MIICajCCAdOgAwIBAgICBEUwDQYJKoZIhvcNAQEEBQA
 wdzELMAkGA1UEBhMCVVMxLDAqBgNVBAoTI05ldHNjYXBlIENbW11bmljYX
 Rpb25zIENvcnBvcmF0aW9uMRwwGgYDVQQLExNJbmZvcm1hdGlvbiBTeXN0
 ZW1zMRwwGgYDVQQDExNyb290Y2EubmV0c2NhcGUuY29tMB4XDTk3MDYwNj
 E5NDc1OVoXDTk3MTIwMzE5NDc1OVowgYkxCzAJBgNVBAYTAlVTMSYwJAYD
 VQQKEx1OZXRzY2FwZSBDb21tdW5pY2F0aW9ucyBDb3JwLjEYMBYGA1UEAx
 MPVGltb3RoeSBBIEhvd2VzMSEwHwYJKoZIhvcNAQkBFhJob3dlc0BuZXRz
 Y2FwZS5jb20xFTATBgoJkiaJk/IsZAEBEwVob3dlczBcMA0GCSqGSIb3DQ
 EBAQUAA0sAMEgCQQC0JZf6wkg8pLMXHHCUvMfL5H6zjSk4vTTXZpYyrdN2
 dXcoX49LKiOmgeJSzoiFKHtLOIboyludF90CgqcxtwKnAgMBAAGjNjA0MB
 EGCWCGSAGG+EIBAQQEAwIAoDAfBgNVHSMEGDAWgBT84FToB/GV3jr3mcau
 +hUMbsQukjANBgkqhkiG9w0BAQQFAAOBgQBexv7o7mi3PLXadkmNP9LcIP
 mx93HGp0Kgyx1jIVMyNgsemeAwBM+MSlhMfcpbTrONwNjZYW8vJDSoi//y
 rZlVt9bJbs7MNYZVsyF1unsqaln4/vy6Uawfg8VUMk1U7jt8LYpo4YULU7
 UZHPYVUaSgVttImOHZIKi4hlPXBOhcUQ==
```

3.8 Extended Types

The types defined by this document can be extended with private types using the non-standard, private values mechanism defined in [RFC 2045]. Non-standard, private types with a name starting with "X-" may be defined bilaterally between two cooperating agents without outside registration or standardization.

4. Formal Grammar

The following formal grammar is provided to assist developers in building parsers for the vCard.

This syntax is written according to the form described in RFC 2234, but it references just this small subset of RFC 2234 literals:

```
;****************************************
; Commonly Used Literal Definition
;****************************************

ALPHA        = %x41-5A / %x61-7A
     ; Latin Capital Letter A-Latin Capital Letter Z /
     ; Latin Small Letter a-Latin Small Letter z
```

```
   CHAR         = %x01-7F
        ; Any C0 Controls and Basic Latin, excluding NULL from
        ; Code Charts, pages 7-6 through 7-9 in [UNICODE]

   CR           = %x0D
        ; Carriage Return

   LF           = %0A
        ; Line Feed

   CRLF         = CR LF
        ; Internet standard newline

   ;CTL         = %x00-1F / %x7F
        ; Controls. Not used, but referenced in comments.

   DIGIT        = %x30-39
        ; Digit Zero-Digit Nine

   DQUOTE       = %x22
        ; Quotation Mark

   HTAB         = %x09
        ; Horizontal Tabulation

   SP           = %x20
        ; space

   VCHAR        = %x21-7E
        ; Visible (printing) characters

   WSP          = SP / HTAB
        ; White Space

   ;****************************************
   ; Basic vCard Definition
   ;****************************************

   vcard_entity = 1*(vcard)

   vcard        = [group "."] "BEGIN" ":" "VCARD" 1*CRLF
                  1*(contentline)
        ;A vCard object MUST include the VERSION, FN and N types.
                  [group "."] "END" ":" "VCARD" 1*CRLF

   contentline  = [group "."] name *(";" param ) ":" value CRLF
        ; When parsing a content line, folded lines must first
        ; be unfolded according to the unfolding procedure
```

```
        ; described above. When generating a content line, lines
        ; longer than 75 characters SHOULD be folded according to
        ; the folding procedure described in [MIME DIR].

   group        = 1*(ALPHA / DIGIT / "-")

   name         = iana-token / x-name
        ; Parsing of the param and value is
        ; based on the "name" or type identifier
        ; as defined in ABNF sections below

   iana-token   = 1*(ALPHA / DIGIT / "-")
        ; vCard type or parameter identifier registered with IANA

   x-name       = "X-" 1*(ALPHA / DIGIT / "-")
        ; Reserved for non-standard use

   param        = param-name "=" param-value *("," param-value)

   param-name   = iana-token / x-name

   param-value  = ptext / quoted-string

   ptext        = *SAFE-CHAR

   value        = *VALUE-CHAR

   quoted-string = DQUOTE QSAFE-CHAR DQUOTE

   NON-ASCII    = %x80-FF
        ; Use is restricted by CHARSET parameter
        ; on outer MIME object (UTF-8 preferred)

   QSAFE-CHAR   = WSP / %x21 / %x23-7E / NON-ASCII
        ; Any character except CTLs, DQUOTE

   SAFE-CHAR    = WSP / %x21 / %x23-2B / %x2D-39 / %x3C-7E / NON-ASCII
        ; Any character except CTLs, DQUOTE, ";", ":", ","

   VALUE-CHAR   = WSP / VCHAR / NON-ASCII
        ; Any textual character

   ;****************************************
   ; vCard Type Definition
   ;
   ; Provides type-specific definitions for how the
   ; "value" and "param" are defined.
   ;****************************************
```

```
   ;For name="NAME"
   param        = ""
        ; No parameters allowed

   value        = text-value

   ;For name="PROFILE"
   param        = ""
        ; No parameters allowed

   value        = text-value
        ; Value MUST be the case insensitive value "VCARD

   ;For name="SOURCE"
   param        = source-param
        ; No parameters allowed

   value        = uri

   source-param = ("VALUE" "=" "uri")
                / ("CONTEXT" "=" "word")
        ; Parameter value specifies the protocol context
        ; for the uri value.
                / (x-name "=" *SAFE-CHAR)

   ;For name="FN"
   ;This type MUST be included in a vCard object.
   param        = text-param
        ; Text parameters allowed

   value        = text-value

   ;For name="N"
   ;This type MUST be included in a vCard object.

   param        = text-param
        ; Text parameters allowed

   value        = n-value

   n-value      = 0*4(text-value *("," text-value) ";")
                  text-value *("," text-value)
        ; Family; Given; Middle; Prefix; Suffix.
        ; Example: Public;John;Quincy,Adams;Reverend Dr. III

   ;For name="NICKNAME"
   param        = text-param
        ; Text parameters allowed
```

```
value        = text-list

;For name="PHOTO"
param        = img-inline-param
     ; Only image parameters allowed

param        =/ img-refer-param
     ; Only image parameters allowed

value        = img-inline-value
     ; Value and parameter MUST match

value        =/ img-refer-value
     ; Value and parameter MUST match

;For name="BDAY"
param        = ("VALUE" "=" "date")
     ; Only value parameter allowed

param        =/ ("VALUE" "=" "date-time")
     ; Only value parameter allowed

value        = date-value
     ; Value MUST match value type

value        =/ date-time-value
     ; Value MUST match value type

;For name="ADR"
param        = adr-param / text-param
     ; Only adr and text parameters allowed

value        = adr-value

;For name="LABEL"
param        = adr-param / text-param
     ; Only adr and text parameters allowed

value        = text-value

;For name="TEL"
param        = tel-param
     ; Only tel parameters allowed

value        = phone-number-value

tel-param    = "TYPE" "=" tel-type *("," tel-type)
```

```
   tel-type     = "HOME" / "WORK" / "PREF" / "VOICE" / "FAX" / "MSG"
                / "CELL" / "PAGER" / "BBS" / "MODEM" / "CAR" / "ISDN"
                / "VIDEO" / "PCS" / iana-token / x-name
        ; Values are case insensitive

   ;For name="EMAIL"
   param        = email-param
        ; Only email parameters allowed

   value        = text-value

   email-param  = "TYPE" "=" email-type ["," "PREF"]
        ; Value is case insensitive

   email-type   = "INTERNET" / "X400" / iana-token / "X-" word
        ; Values are case insensitive

   ;For name="MAILER"
   param        = text-param
        ; Only text parameters allowed

   value        = text-value

   ;For name="TZ"
   param        = ""
        ; No parameters allowed

   value        = utc-offset-value

   ;For name="GEO"
   param        = ""
        ; No parameters allowed

   value        = float-value ";" float-value

   ;For name="TITLE"
   param        = text-param
        ; Only text parameters allowed

   value        = text-value

   ;For name="ROLE"
   param        = text-param
        ; Only text parameters allowed

   value        = text-value

   ;For name="LOGO"
```

```
   param        = img-inline-param / img-refer-param
        ; Only image parameters allowed

   value        = img-inline-value / img-refer-value
        ; Value and parameter MUST match

   ;For name="AGENT"
   param        = agent-inline-param

   param        =/ agent-refer-param

   value        = agent-inline-value
        ; Value and parameter MUST match

   value        =/ agent-refer-value
        ; Value and parameter MUST match

   agent-inline-param = ""
        ; No parameters allowed

   agent-refer-param = "VALUE" "=" "uri"
        ; Only value parameter allowed

   agent-inline-value = text-value
        ; Value MUST be a valid vCard object

   agent-refer-value = uri
        ; URI MUST refer to image content of given type

   ;For name="ORG"

   param        = text-param
        ; Only text parameters allowed

   value        = org-value

   org-value    = *(text-value ";") text-value
        ; First is Organization Name, remainder are Organization Units.

   ;For name="CATEGORIES"
   param        = text-param
        ; Only text parameters allowed

   value        = text-list

   ;For name="NOTE"
   param        = text-param
        ; Only text parameters allowed
```

```
value        = text-value

;For name="PRODID"
param        = ""
     ; No parameters allowed

value        = text-value

;For name="REV"
param        = ["VALUE" =" "date-time"]
     ; Only value parameters allowed. Values are case insensitive.

param        =/ "VALUE" =" "date"
     ; Only value parameters allowed. Values are case insensitive.

value        = date-time-value

value        =/ date-value

;For name="SORT-STRING"
param        = text-param
     ; Only text parameters allowed

value        = text-value

;For name="SOUND"
param        = snd-inline-param
     ; Only sound parameters allowed

param        =/ snd-refer-param
     ; Only sound parameters allowed

value        = snd-line-value
     ; Value MUST match value type

value        =/ snd-refer-value
     ; Value MUST match value type

snd-inline-value     = binary-value CRLF
     ; Value MUST be "b" encoded audio content

snd-inline-param     = ("VALUE" "=" "binary"])
                     / ("ENCODING" "=" "b")
                     / ("TYPE" "=" *SAFE-CHAR)
     ; Value MUST be an IANA registered audio type

snd-refer-value      = uri
     ; URI MUST refer to audio content of given type
```

```
snd-refer-param      = ("VALUE" "=" "uri")
                     / ("TYPE" "=" word)
     ; Value MUST be an IANA registered audio type

;For name="UID"
param        = ""
     ; No parameters allowed

value        = text-value

;For name="URL"
param        = ""
     ; No parameters allowed

value        = uri

;For name="VERSION"
;This type MUST be included in a vCard object.
param        = ""
     ; No parameters allowed

value        = text-value
     ; Value MUST be "3.0"

;For name="CLASS"
param        = ""
     ; No parameters allowed

value        = "PUBLIC" / "PRIVATE" / "CONFIDENTIAL"
             / iana-token / x-name
     ; Value are case insensitive

;For name="KEY"
param        = key-txt-param
     ; Only value and type parameters allowed

param        =/ key-bin-param
     ; Only value and type parameters allowed

value        = text-value

value        =/ binary-value

key-txt-param = "TYPE" "=" keytype

key-bin-param = ("TYPE" "=" keytype)
              / ("ENCODING" "=" "b")
     ; Value MUST be a "b" encoded key or certificate
```

```
keytype      = "X509" / "PGP" / iana-token / x-name
     ; Values are case insensitive

;For name="X-" non-standard type
param        = text-param / (x-name "=" param-value)
     ; Only text or non-standard parameters allowed

value        = text-value

;*****************************************
; vCard Commonly Used Parameter Definition
;*****************************************

text-param   = ("VALUE" "=" "ptext")
             / ("LANGUAGE" "=" langval)
             / (x-name "=" param-value)

langval      = <a language string as defined in RFC 1766>

img-inline-value     = binary-value
     ;Value MUST be "b" encoded image content

img-inline-param

img-inline-param     = ("VALUE" "=" "binary")
                     / ("ENCODING" "=" "b")
                     / ("TYPE" "=" param-value
     ;TYPE value MUST be an IANA registered image type

img-refer-value = uri
     ;URI MUST refer to image content of given type

img-refer-param      = ("VALUE" "=" "uri")
                     / ("TYPE" "=" param-value)
     ;TYPE value MUST be an IANA registered image type

adr-param    = ("TYPE" "=" adr-type *("," adr-type))
             / (text-param)

adr-type     = "dom" / "intl" / "postal" / "parcel" / "home"
             / "work" / "pref" / iana-type / x-name

adr-value    = 0*6(text-value ";") text-value
     ; PO Box, Extended Address, Street, Locality, Region, Postal
     ; Code, Country Name
```

```
;****************************************
; vCard Type Value Definition
;****************************************

text-value-list      = 1*text-value *("," 1*text-value)

text-value   = *(SAFE-CHAR / ":" / DQUOTE / ESCAPED-CHAR)

ESCAPED-CHAR = "\\" / "\;" / "\," / "\n" / "\N")
     ; \\ encodes \, \n or \N encodes newline
     ; \; encodes ;, \, encodes ,

binary-value = <A "b" encoded text value as defined in [RFC 2047]>

date-value   = <A single date value as defined in [MIME-DIR]>

time-value   = <A single time value as defined in [MIME-DIR]>

date-time-value = <A single date-time value as defined in [MIME-DIR]

float-value  = <A single float value as defined in [MIME-DIR]>

phone-number-value = <A single text  value as defined in [CCITT
                      E.163] and [CCITT X.121]>

uri-value    = <A uri value as defined in [MIME-DIR]>

utc-offset-value = ("+" / "-") time-hour ":" time-minute
time-hour    = 2DIGIT                ;00-23
time-minute  = 2DIGIT                ;00-59
```

5. Differences From vCard v2.1

This specification has been reviewed by the IETF community. The review process introduced a number of differences from the [VCARD] version 2.1. These differences require that vCard objects conforming to this specification have a different version number than a vCard conforming to [VCARD]. The differences include the following:

- The QUOTED-PRINTABLE inline encoding has been eliminated. Only the "B" encoding of [RFC 2047] is an allowed value for the ENCODING parameter.

- The method for specifying CRLF character sequences in text type values has been changed. The CRLF character sequence in a text type value is specified with the backslash character sequence "\n" or "\N".

- Any COMMA or SEMICOLON in a text type value must be backslash escaped.

- VERSION value corresponding to this specification MUST be "3.0".

- The [MIME-DIR] predefined types of SOURCE, NAME and PROFILE are allowed.

- The [MIME-DIR] VALUE type parameter for value data typing is allowed. In addition, there are extensions made to these type values for additional value types used in this specification.

- The [VCARD] CHARSET type parameter has been eliminated. Character set can only be specified on the CHARSET parameter on the Content-Type MIME header field.

- The [VCARD] support for non-significant WSP character has been eliminated.

- The "TYPE=" prefix to parameter values is required. In [VCARD] this was optional.

- LOGO, PHOTO and SOUND multimedia formats MUST be either IANA registered types or non-standard types.

- Inline binary content must be "B" encoded and folded. A blank line after the encoded binary content is no longer required.

- TEL values can be identified as personal communication services telephone numbers with the PCS type parameter value.

- The CATEGORIES, CLASS, NICKNAME, PRODID and SORT-STRING types have been added.

- The VERSION, N and FN types MUST be specified in a vCard. This identifies the version of the specification that the object was formatted to. It also assures that every vCard will include both a structured and formatted name that can be used to identify the object.

6. Acknowledgements

The many valuable comments contributed by members of the IETF ASID working group are gratefully acknowledged, as are the contributions by Roland Alden, Stephen Bartlett, Alec Dun, Patrik Faltstrom, Daniel Gurney, Bruce Johnston, Daniel Klaussen, Pete Miller, Keith Moore, Vinod Seraphin, Michelle Watkins. Chris Newman was especially helpful in navigating the intricacies of ABNF lore.

7. Authors' Addresses

```
BEGIN:vCard
VERSION:3.0
FN:Frank Dawson
ORG:Lotus Development Corporation
ADR;TYPE=WORK,POSTAL,PARCEL:;;6544 Battleford Drive
 ;Raleigh;NC;27613-3502;U.S.A.
TEL;TYPE=VOICE,MSG,WORK:+1-919-676-9515
TEL;TYPE=FAX,WORK:+1-919-676-9564
EMAIL;TYPE=INTERNET,PREF:Frank_Dawson@Lotus.com
EMAIL;TYPE=INTERNET:fdawson@earthlink.net
URL:http://home.earthlink.net/~fdawson
END:vCard


BEGIN:vCard
VERSION:3.0
FN:Tim Howes
ORG:Netscape Communications Corp.
ADR;TYPE=WORK:;;501 E. Middlefield Rd.;Mountain View;
 CA; 94043;U.S.A.
TEL;TYPE=VOICE,MSG,WORK:+1-415-937-3419
TEL;TYPE=FAX,WORK:+1-415-528-4164
EMAIL;TYPE=INTERNET:howes@netscape.com
END:vCard
```

8. Security Considerations

vCards can carry cryptographic keys or certificates, as described in Section 3.7.2.

Section 3.7.1 specifies a desired security classification policy for a particular vCard. That policy is not enforced in any way.

The vCard objects have no inherent authentication or privacy, but can easily be carried by any security mechanism that transfers MIME objects with authentication or privacy. In cases where threats of "spoofed" vCard information is a concern, the vCard SHOULD BE

transported using one of these secure mechanisms.

The information in a vCard may become out of date. In cases where the vitality of data is important to an originator of a vCard, the "URL" type described in section 3.6.8 SHOULD BE specified. In addition, the "REV" type described in section 3.6.4 can be specified to indicate the last time that the vCard data was updated.

9. References

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10. Full Copyright Statement