



Via Facsimile: (703) 907-7501

September 17, 1997

Michael Petricone  
General Counsel  
Consumer Electronics  
Manufacturers Association  
2500 Wilson Boulevard  
Arlington, VA 22201-3834

Re: WebTV Proposal to CEMA R-4.3

Dear Mr. Petricone,

I am writing to you regarding a submission that my client, WebTV Networks, Inc. (WebTV), recently made to CEMA R-4.3. More specifically, on September 8, 1997, Dan Zigmund submitted a document entitled "Proposal to CEMA R-4.3 for URLs in T-2 for EIA-608" (copy attached) to Wayne Luplow, Chair of R-4.3.

Please note that WebTV Networks is in the process of preparing a patent application covering subject matter included in this submission. As a result, it is possible that WebTV Networks may be issued a patent covering technology adopted by CEMA as a standard. In that event, WebTV Networks will grant a patent license to applicants wishing to implement the standard, which licenses will be offered under reasonable terms and conditions that are demonstrably free of any unfair competition. WebTV Networks expressly disclaims any other representations, warranties or obligations regarding its contribution.

If you should have any questions regarding this matter, please do not hesitate to contact me directly at the address provided below.

Very truly yours,

A handwritten signature in cursive script that reads "Stuart B. Schneck".

Stuart B. Schneck  
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Cc: John Kelly, EIA General Counsel Via Facsimile: (703) 907-7501  
Jean Johnson, EIA Engineering Project Manager Via Facsimile: (703) 907-7501  
Dan Zigmund, Senior Manager, WebTV

## PROPOSAL TO CEMA R-4.3 for URLs in T-2 for EIA-608

September 4th 1997

By Dan Zigmond, WebTV Networks

### Executive Summary:

Proposed below is a system to insert Internet Uniform Resource Locators (URLs) within the line-21 data system using the Text-2 (T-2) service. These URLs may be used by receiving devices in a variety of ways to associate Internet content with related television broadcast content. WebTV Networks, Inc. (WNI) claims intellectual property rights in the implementation and execution of these functions within the receiving device. In accordance with EIA/CEMA by laws, WNI will offer license to such technology to all interested parties in non-discriminatory terms.

----- to be inserted in section 1.5 of EIA-608 -----

One of the Text Mode data services (Text-2) can also be used to transmit Internet Uniform Resource Locators (URLs). This is done to associate resources on the Internet with television broadcast content.

----- to be inserted as section 4.9 of EIA-608 -----

### 4.9 Transmitting URLs in T-2

Uniform Resource Locators (URLs) are compact string representations of a location for use in identifying an abstract or physical resource on the Internet. URLs can be transmitted in the T-2 service, and may be used by receiving devices to permit the linking of television programs with related content on the Internet so that the content from these Internet services may be combined, mixed or shared by the receiving device.

#### 4.9.1 Standard syntax

URLs should be transmitted in T-2 by using the following general format:

```
<url>{ attr1:val1 } { attr2:val2 } ... { attrn:valn } { checksum }
```

In other words, the URL is enclosed in angle brackets, followed by zero or more pairs of attributes and values in square brackets, which is then followed by a checksum in square brackets. (These delimiters were chosen because they are explicitly excluded from URLs by the Internet Engineering Task Force standard and are present in the standard EIA-608 character set.) For example:

```
<http://webtv.net>{ type:sponsor } { name:WebTV Networks } { 4D8E }
```

Because it is very common for a URL to have a "type" attribute, this attribute will be understood if a value is given alone:

```
<http://www.cnn.com>{ network } { 170B }
<http://www.thex-files.com>{ program } { 4F28 }
<http://webtv.net>{ sponsor } { name:WebTV Networks } { 3C17 }
```

In order to detect data corruption, checksum must be added at the end. To compute the checksum, adjacent characters in the string (starting with the left angle bracket) are paired to form 16-bit integers; if there are an odd number of characters, the final character is paired with a byte of zeros. The checksum is computed so

that the one's complement sum of all of these 16-bit integers plus the checksum equals the 16-bit integer with all 1 bits (-0 in one's complement arithmetic); in other words, the checksum is the one's complement of the one's complement sum of the 16-bit integers. This 16-bit checksum is transmitted as four hexadecimal digits in square brackets following the right square bracket of the final attribute/value pair (or following the right angle bracket if there are no attribute/value pairs). Because the checksum characters themselves (including the surrounding square brackets) are not included in the calculation of the checksum, they must be stripped from the string by the receiver before the checksum is recalculated there.

Only two attributes are defined in this standard: "type" and "name". The type indicates what sort of content the URL is associated with (for example, content related to the current television program or with the broadcast network). The type can be any one of the following values (and is case insensitive):

Value	URL is associated with
PROGRAM	the current program
NETWORK	the broadcast network
STATION	the local station
SPONSOR	a commercial sponsor of the current program
OPERATOR	the service (e.g., cable or satellite) operator

The "name" attribute indicates a human-readable title for the resource. It can be any string of EIA-608 characters, and should be kept as short as possible to conserve bandwidth. EIA-608 extended characters can be used for non-English titles, but some receivers may be unable to display these titles.

Other attributes could be defined at a later date. Receivers should ignore attributes they do not understand.

A complete syntax is therefore:

```
<url>[ {type: val1} ] {name: val2} [ {attrn: valn} ]n [checksum]
```

Symbols in *italics* are data that would be filled, symbols in **bold** are literal characters that would appear in the final string sent. The symbols in curly brackets are optional; the symbols in curly brackets with a subscript "n" can be repeated zero or more times. All of the following examples would be valid (although the checksums are examples only and have not been calculated):

```
<http://www.sony.com>{ 035A}
<http://www.philips.com>{ 39F2}
<http://www.hitachi.com>{ name:Hitachi}[ 985D}
<http://www.microsoft.com>{ type:sponsor}[ C9B6}
<http://www.tvplex.com/BuenaVista/SiskelAndEbert>{ program}[ F60E}
<http://www.nbc.com>{ network}[ 1717}
<http://www.pbs.org>{ network}[ name:PBS][ 494E}
<http://www.netscape.com>{ type:sponsor}[ 63A0}
<http://www.zenith.com>{ name:Zenith}[ 3A4F}
<http://www.thex-files.com>{ program}[ name:The X Files}[ F53C}
<http://www.webtv.net>{ sponsor}[ strange:ignore][ 268E}
```

In the last case, most receivers would presumably ignore the non-standard "strange" attribute and its value, although the bytes would be used in the calculation of the checksum. URLs are not limited to the "http:" scheme, so the following are also valid:

```
<mailto:info@webtv.net>{ sponsor}[ 0163}
<news:alt.tv.simpsons>{ program}[ C20D}
```

#### 4.9.2 Special characters

Three characters are permitted in Internet URLs but are not part of the standard EIA-608 character set (see section 3.4.1): asterisk ("\*"), underscore ("\_"), and tilde ("~"). Because they are optional extended characters, these three characters cannot be displayed on all receivers. While URLs are not typically displayed in the usual fashion, having characters in URLs which are unavailable on the receiver may cause confusion to viewers who attempt to view the URLs as standard text mode data. Therefore, these three characters should be encoded using the standard Internet mechanism of the percent character followed by the two-digit hexadecimal value of these characters in US-ASCII. The appropriate values are:

Character	Encoding
*	%2A
_	%5F
~	%7E

The receiver should decode these characters before displaying the URL to the viewer if the characters are available on the receiver.

#### 4.9.3 Bandwidth considerations

In order to preserve sufficient bandwidth for other services on field 1 of line 21, URLs inserted on T-2 should be limited to 15% of the total line 21 bandwidth. This leaves a full 40% of bandwidth for field 1 captioning, 30% for the T-1 service, and an additional 15% for downstream insertion of additional URLs or other text services on field 2. The bandwidth consumed by URLs in T2 can be controlled by pausing between insertions, following the same formula for the length of pause given in section 10.7.2 for field 2 text services.

→ JJ .

## FAX

Date: Sept. 17, 1997To: Michael PetriconeConsumer Electronics Manufacturers Assoc.Phone: (703) 907-7544Fax: (703) 907-7561From: Bobby HirotaPhone: (415) 614-8593Fax: (415) 614-2782Total pages including this cover page: 7

## NOTE

Dear Michael-Please make copies for John Kelly & Jane Johnson.Thank you,Bobby

If you receive this fax by mistake, please telephone us (collect) at the above voice number to let us know of the error. If this fax contains privileged or otherwise legally protected information, disclosure of the information to anyone other than the named recipient(s) is not authorized, and you may not lawfully read, copy, or otherwise use this fax unless you are a named recipient or a named recipient's authorized representative.