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Proposal for introducing a trigger mechanism into TV transmissions

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EUROPEAN ASSOCIATION OF CONSUMER ELECTRONICS MANUFACTURERS

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EACEM - International Association, Diamant Building, Bd. A. Reyers 80, B-1030 BRUSSEL
Phone: +32 2 706 85 50 Fax: +32.2 706 85 51 E-mail: info@eacem.be

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PROPOSAL FOR INTRODUCING A TRIGGER MECHANISM INTO TV TRANSMISSIONS

FOREWORD

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IEC-PAS 62297 was submitted by the EACEM (European Association of Consumer Electronics Manufacturers) and has been processed by IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this PAS is based on the following document:	This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document:
Draft PAS	**Report on voting**
100/406/PAS	100/437/RVD

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Version History

This document was drafted by EACEM Project Team 1.4 “Data Broadcasting” and replaces document **TP-14-99-16** and all of its versions as outlined below.

Version	Date	Author	Description
0.1	Feb 2000	Jo Vandale	Initial 'reworked' version after the TP1.4 meeting in Brussels
0.2	20 July 2000	Jo Vandale	Adaptations, EACEM TP1.4 and TeleWeb meeting in Rennes
0.3	8 Aug 2000	Jo Vandale	Adaptations during the EACEM TP1.4 meeting in Brugge
0.4	31 Aug 2000	Jo Vandale	Minor adaptations during the TeleWeb meeting in Rousset
0.5	11 Sept 2000	Jo Vandale	Editorial changes after internal review.
0.6	15 Sept 2000	Jo Vandale	Editorial changes after review by David Tarrant. Addition of Annex C 'Simple trigger protocol for page-format Teletext (Informative)' by David Tarrant.
0.7	29 Sept 2000	Jo Vandale	Removing the 'event-null' and replacing it with 'dummy URL' to realise the same goal, the ability to display the icon without running an application.
0.8	11 Oct 2000	Jo Vandale	Editorial changes after review by David Tarrant. Addition of the icon proposal to Annex B (Designed by Bob Vranken, Philips).
1.0	3 Nov 2000	Jo Vandale	Released version after review by the TeleWeb Technical Group.
2.0	5 Feb 2001	Jo Vandale	Adapting to the new EACEM references.
2.1 / r00	15 Feb 2001	Jo Vandale	Adding the new EACEM template (Cover, Header, Footer, …)
3.0 / r01	23 April 2001	Jo Vandale	Adding the minor changes requested by Jorg Polkowski + meeting remarks EACEM Project Team 1.4

Contents

1 Scope

Existing data broadcasting specifications do not allow a service provider to **trigger** an **application** in a receiver. This document specifies a triggering scheme for TV broadcasting based on the requirements defined in Annex A. Examples of possible use include displaying information to warn of severe weather conditions and advising of extreme content in TV programmes. In an interactive system, a message or icon might be displayed inviting on-line access to vote, to register an interest in an advertised product, or to browse programme-related content.

For the purposes of this document a **trigger** is defined as information sent from a service provider as part of a data broadcasting transmission and intended to control an **application** in a receiver. Additional information can be supplied along with the basic **trigger** to allow filtering or prioritisation techniques to be applied at the receiver. The transmission aspects of trigger messages are specified in [1].

Annex C describes a simple method for triggering the display of a Teletext page from within a standard page-format Teletext transmission.

2 References

[1] EACEM TR-038: "Trigger Transport Layers"

[2] ISO, ISO-8859-1: “Information processing – 8-bit single byte-coded graphic character sets, Latin alphabets”.

[3] IETF, RFC 1738 (1994): "Uniform Resource Locators".

[4] ETSI, TR 101 231: "Television Systems: Register of Country and Network Identification (CNI) and of Video Programming System (VPS) codes".

[5] ETSI, ETS 300 706: "Enhanced Teletext Specification"

[6] EACEM TR-047: “TeleWeb Application Part 2 Profile 1 Enhanced".

[7] ATVEF, "Enhanced Content Specification", v1.1 r26.

[8] ECMA, ECMA Standard 262, "ECMAScript Language Specification".

[9] IETF, RFC 791 (1981): "Internet Protocol".

[10] IETF, RFC 1071 (1988): "Computing the Internet checksum".

3 Definitions, Abbreviations and Conventions

3.1 Definitions and Tokens

For the purpose of this document the following terms and definitions apply, in singular or plural form:

ActiveTimeValue A member of the **ApplicationObject**. The value decrements at video frame rate. It is updated on every reception of an **event message**.

application Software running on a receiver that is addressed by the URL of a **trigger message** and provides the following modes of operation:

1. The display of information, the playback of sound, the download of data, …
2. The initiation of any action.

Application examples include the display of a simple text message sent as part of the trigger message, the display of a Teletext, TeleWeb or Internet page, information from an EPG, electronic voting, an emergency alert, …

ApplicationObject An object storing the information about an **application** started or modified by triggers referencing the same URL.

attribute A member of an **ApplicationObject** or **TriggerObject** storing the information transported via an **attribute element**.

attribute element An attribute name/value pair.

attribute string Any sequence of characters with codes in the range 0x20 to 0x7E inclusive, excluding square brackets (0x5B and 0x5D).

CountdownValue A member of a **TriggerObject**. The value decrements at video frame rate. It is updated on every reception of a **trigger mes**.

DateTime A date and time instance of UTC expressed in the form: *yyyymmdd*T*hhmmss*, where *yyyy* represents a year, *mm* represents a month (range 1 - 12), *dd* represents the day of the month (range 1 - 31), the capital letter "T" separates the date component from the time component, *hh* represents an hour (range 0 - 23), *mm* represents the minutes (range 0 - 59) and *ss* represents the seconds (range 0 - 59).

It is possible to shorten the description by reducing the resolution. For example *yyyymmdd*T*hhmm* (no seconds specified) is valid, as is simply *yyyymmdd* (no time specified at all). When no date component is specified, the date reference shall be assumed to be the current day. When no time component is specified, the time reference shall be assumed to be midnight at the beginning of the specified day.

Dummy URL A URL that does not reference any application or data. It is used in the mandatory URL field of a **trigger message** when the intention is to display only the trigger icon (together with it's text) and not to control an application.

event message Information extracted from a **trigger message** that is used to create an **ApplicationObject**.

event start An **event message** with its 'script' **attribute element** set to 'start'.

event stop An **event message** with its 'script' **attribute element** set to 'stop'.

pending trigger The state where a trigger message has created a **TriggerObject** but the conditions to create an **ApplicationObject** have not yet occurred.

priority filtering Rejecting a **trigger message** on account of the value assigned to its 'priority' **attribute element**.

RelativeTime	A time period measured in seconds and video frames. It can be expressed in one of the following forms: F*ff*, *s*, *s*F*ff*, *ss*, *ss*F*ff*, *sss*, *sss*F*ff*, *ssss* or *ssss*F*ff*, where *s* represents a time in seconds, *f* represents a number of video frames and the capital letter "F" separates the seconds component from the frames component. The seconds component may contain up to four decimal digits. Thus the maximum number of seconds that can be specified is 9999. The maximum number of frames that can be specified is 25 for 50Hz systems and 30 for 60Hz systems. A frame value, if specified, must always be defined using two digits (e.g. 5 frames are encoded as F05).
string	Any sequence of characters with codes in the range 0x20 to 0x7E inclusive. Throughout this document **strings** are not case sensitive unless otherwise indicated.
trigger	A signal sent from a service provider as part of a data broadcasting transmission with the intention to start or modify an application at a certain time.
trigger character	A character with a code in the range 0x20 to 0x7E inclusive.
trigger del	A **trigger message** with a 'delete' **attribute element**.
trigger event	The instant in time when a **trigger** fires and an **event message** is created.
trigger mes	A **trigger message** without a 'delete' **attribute element**.
trigger message	The information embedded in a **trigger** and intended to control an **application** in a receiver.
TriggerObject	An object storing the information from all the triggers referencing the same URL.
trigger_text	The descriptive part of a **trigger message**.
URL string	Any sequence of characters with codes in the range 0x20 to 0x7E inclusive, excluding angle brackets (0x3C and 0x3E).

3.2 Abbreviations

- CLUT Colour Look Up Table
- CNI Country and Network Identification.
- EPG Electronic Programme Guide
- URL Uniform Resource Locator.
- UTC Co-ordinated Universal Time.
- VPS Video Programming System.

4 Trigger message

The **trigger message** allows **triggers** to be coded and implemented for different **applications**.

4.1 General

4.1.1 Viewer interaction

The mechanism through which the viewer enables or disables trigger handling or sets priority threshold levels is at the receiver manufacturer's discretion.

The appearance of an icon and the viewer interaction when responding to it is also at the receiver manufacturer's discretion.