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Technical Specification

Broadcast and On-line Services: Search, select, and rightful use of content on personal storage systems ("*TV-Anytime* Phase 1"); Part 1: Phase 1 Benchmark Features

Reference
RTS/JTC-TVA-PH1-08

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ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

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Foreword

This Technical Specification (TS) has been produced by Joint Technical Committee (JTC) Broadcast of the European Broadcasting Union (EBU), Comité Européen de Normalisation ELECtrotechnique (CENELEC) and the European Telecommunications Standards Institute (ETSI).

The present document is part 1 of a multi-part deliverable covering Broadcast and On-line Services: Search, select and rightful use of content on personal storage systems ("*TV-Anytime* Phase 1"), as identified below:

Part 1: "Phase 1 Benchmark Features";

Part 2: "System description";

Part 3: "Metadata";

Part 4: "Content referencing";

Part 5: "Rights management";

Part 6: "Delivery of metadata over a bi-directional network";

Part 7: "Bi-directional metadata delivery protection".

Introduction

The present document is based on a submission by the *TV-Anytime* forum (http://www.tv-anytime.org).

"*TV-Anytime* Phase 1" (TVA-1) is the first full and synchronized set of specifications established by the *TV-Anytime* Forum. TV-A-1 features enable the search, selection, acquisition and rightful use of content on local and/or remote personal storage systems from both broadcast and online services.

The features are supported and enabled by the specifications for Metadata, Content Referencing, and Bi-directional Metadata Delivery Protection and rights management, TS 102 822-3 sub-parts 1 [2] and 2 [3], TS 102 822-4 [4], TS 102 822-5, TS 102 822-6 sub-parts 1 [6] and 2 [7] and TS 102 822-7 [8] respectively. This list of Phase 1 Features is to be used as guidance to manufacturers, service providers and content providers regarding the implementation of the Phase 1 *TV-Anytime* specifications.

There will be further *TV-Anytime* phases published and Business Models for Post-Phase 1 are currently being defined to include Private and public domains, portable recordable media, super distribution (legal sharing of content between consumers), peripheral device support and mobile devices, amongst others.

1 Scope

The present document lists and defines the *TV-Anytime* Phase 1 evolutionary range of features which describe PDR (Personal Digital Recorder) usage models that the *TV-Anytime* standards facilitate.

These features are supported by the specifications for Metadata, Content Referencing, and Bi-directional Metadata Delivery Protection and Rights Management, TS 102 822-3 sub-parts 1 [2] and 2 [3], TS 102 822-4 [4], TS 102 822-5, TS 102 822-6 sub-parts 1 [6] and 2 [7] and TS 102 822-7 [8] respectively.

These specifications enable search, select, acquire and rightful use of content on local and/or remote personal storage systems from both broadcast and online services.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

[1] Void.

[2] ETSI TS 102 822-3-1: "Broadcast and On-line Services: Search, select, and rightful use of content on personal storage systems ("*TV-Anytime* Phase 1"); Part 3: Metadata; Sub-part 1: Metadata schemas".

[3] ETSI TS 102 822-3-2: "Broadcast and On-line Services: Search, select, and rightful use of content on personal storage systems ("*TV-Anytime* Phase 1"); Part 3: Metadata; Sub-part 2: System aspects in a uni-directional environment".

[4] ETSI TS 102 822-4: "Broadcast and On-line Services: Search, select, and rightful use of content on personal storage systems ("*TV-Anytime* Phase 1"); Part 4: Content Referencing".

[5] Void.

[6] ETSI TS 102 822-6-1: "Broadcast and On-line Services: Search, select, and rightful use of content on personal storage systems ("*TV-Anytime* Phase 1"); Part 6: Delivery of metadata over a bi-directional network; Sub-part 1: Service and transport".

[7] ETSI TS 102 822-6-2: "Broadcast and On-line Services: Search, select, and rightful use of content on personal storage systems ("*TV-Anytime* Phase 1"); Part 6: Delivery of metadata over a bi-directional network; Sub-part 2: Service discovery".

[8] ETSI TS 102 822-7: "Broadcast and On-line Services: Search, select, and rightful use of content on personal storage systems ("*TV-Anytime* Phase 1"); Part 7: Bi-directional metadata delivery protection".

3 Definitions and abbreviation

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

bi-directional: two way flow of content and/or information buffering: the ability to start watching a programme before it has finished recording on a disc

capture: transfer to a personal storage device of audio-visual streams and or data files

content: anything the end user would like to access and that can be stored on a PDR

content owner: entity that owns the copyright to content

content provider: entity that acts as the agent for and is the prime distributor of content

consumer profile: data that represents the interests and preferences of the consumer

personal profile: key set of attributes that describe an individual

provider: entity that delivers content or services to the PDR

return path: part of a bi-directional distribution system over which data flows from the consumer to the service provider

segmentation: logical division of content into different parts (e.g. scenes)

service provider: aggregator and supplier of content which may include gateway and management roles

targeting: process which allows providers to deliver relevant content to specific individuals or groups of individuals

***TV-Anytime* devices:** components that comply with *TV-Anytime* specifications and requirements

***TV-Anytime* Phase 1:** specifications included TS 102 822-1

3.2 Abbreviations

PDR	Personal Digital Recorder
PPV	Pay Per View
TLS	Transport Layer Security
URL	Uniform Resource Locator
VOD	Video On Demand

4 Key Phase 1 Business Models

Table 1

	KEY BUSINESS MODELS PHASE 1
BM001	A consumer will want to be able to capture and play back content on a PDR.
BM002	A consumer will want to pause live incoming content on a PDR so that they can "resume" later and continue to watch the content in timeshift mode.
BM003	A consumer will want to view an on-screen menu of content already captured.
BM004	A consumer will want to view a schedule of forthcoming items so they can choose content to record.
BM005	A consumer will want to choose whether a new recording of content replaces existing content that is out of date or is added alongside old content on the PDR.
BM006	A consumer will want to be able to decide whether to capture single or multiple episodes of a series or other programme groupings.
BM007	A consumer will want to amend the list of items "cued" for capture.
BM008	If the device is already tuned to a particular source and has been buffering that content in memory A consumer will want to be able to record the content of the buffer and continue recording so the entire content is captured. If their device was not tuned to that output they may also want to indicate that they wish to capture it at its next availability.
BM009	A consumer will want to set up and manage multiple personal profiles on their PDR associated with one or more service providers.
BM010	A consumer will want to be able to manage the storage space on their PDR system or give an appropriate provider(s) permission to do so e.g. items to be deleted next, permanently stored, etc.
BM011	A consumer will want to allow the PDR to automatically capture content based on their viewing behaviour (profiling).
BM012	Consumers may allow their profile to be captured so it can be aggregated and analysed for targeting purposes.
BM013	A consumer may allow the insertion of pre-captured advertisements or promotions into live/broadcast content based on their viewer profile.
BM014	A consumer may allow the insertion of pre-captured advertisements or promotions into content being played back based on their viewer profile.
BM015	A consumer may allow a service provider to remotely control the functionality of their PDR system (e.g. to capture settings, profile settings, etc.).
BM016	The consumer may want to be able to select segments of programmes for recording based on information provided by the service or content provider.
BM018	The consumer may want functionality that enables them to view content stored on a PDR system in a similar way to viewing content on a DVD - e.g. with index points and a playlist enabling "passive" highlight or other playback modes.
BM019	The consumer may want to navigate and explore content segments using provider indexes (e.g. step through, short/long form, etc.).
BM020	The consumer may want the PDR system to create single personalized programmes from individual "personally linked" segments.
BM021	The consumer will want to be able to create separate profiles for each member of the household (separate recorded content menus, profiling, parental control, etc.).
BM022	To enable the capture of high value premium content, service/content providers will require flexible usage rules (limited viewing windows for example) so that consumers can view their content on the PDR system.
BM023	To enable the capture of high value premium "content on demand", service/content providers will require flexible pricing information so that consumers can select the content of their choice within a selection of commercial offers.
BM024	Consumers (on a bi-directional PDR system) will want to be able to store their "personal" content on Network storage devices. (e.g. if their disk is full).
BM025	Consumers will want to be able to move their personal profiles to different PDRs or PDR systems in other physical locations. (e.g. when they upgrade their devices or while viewing in a hotel when on holiday).
BM026	3rd parties or service/content providers can provide recommendations, content referencing and resolution of content potentially from many other providers.
BM026	Service/content providers can force download "premium/PPV" content to the PDR system (i.e. LocalVOD).

5 Elements comprising the Phase One *TV-Anytime* specification (Tool Box)

Table 2

Tool	Description of tool	Document reference
Classification schemes	The *TV-Anytime* specific sets of controlled terminology. These comprise simple and multi level, multi axis labels that can be applied to a particular piece of content (such as its genre or atmosphere).	TS 102 822-3-1
Content description metadata	*TV-Anytime* - specific information defining, describing and detailing content items (such as a programme's synopsis).	TS 102 822-3-1
CRID	A location independent identifier used to identify content or groups of content. Additionally it is used as the key to associate metadata with the content or group of content.	TS 102 822-4
CRID resolution	The process of finding the constituent parts of a group of content or the locations of the content identified by the CRID.	TS 102 822-4
Fragment encoding	The ability to compress and represent the data forming a fragment so that it can be passed from device to device efficiently.	TS 102 822-3-2
Fragment encapsulation	The ability to identify and associate versioning information with one or more fragments together in a single wrapper called a container (e.g. a receiver will know when a fragment has been updated).	TS 102 822-3-2
Fragment indexing	The ability to efficiently locate metadata fragments having a specific or range of field values within a unidirectional environment where the fragments are carouselled (e.g. the ability to easily find a small amount of relevant data in a large data set).	TS 102 822-3-2
Instance description metadata	*TV-Anytime* - specific information that defines a particular occurrence of a multimedia element (such as a programme's location in a schedule).	TS 102 822-3-1
Metadata authentication	*TV-Anytime* metadata authentication uses a Transport Layer Security (TLS) based secure transport mechanism for metadata. During the TLS handshake the metadata server is authenticated using a digital certificate. After the handshake all metadata delivered to the users device is cryptographically authenticated. This prevents unauthorized changes being made to metadata during the transfer and prevents unauthorized sources delivering metadata to the device.	TS 102 822-7
Metadata encryption	Transport Layer Security (TLS) based secure transport mechanism for metadata. During the TLS handshake a metadata server can optionally specify to the users device that metadata will be encrypted. In that case all metadata delivered to the users device is encrypted with the negotiated algorithm. Metadata may be encrypted to prevent non subscribed users obtaining the same metadata.	TS 102 822-7
Metadata service capability description	Allows a client to flexibly query a metadata service, without making requests that will not be supported by that metadata service.	TS 102 822-6-1
Metadata service discovery	The process by which a client establishes a URL where a *TV-Anytime* metadata service can be found.	TS 102 822-6-2
Query and response format	*TV-Anytime* specific information that describes the content of the metadata queries from end-user device and responses from metadata service providers.	TS 102 822-6-1
Segmentation metadata	*TV-Anytime* - specific information that describes elements of a whole piece of content in a way that allows it to be broken up (such as indexing stories in a news programme by subject thereby allowing only preferred stories to be viewed).	TS 102 822-3-1
Transport protocol - encapsulation of metadata	The ability to transfer *TV-Anytime* metadata information over IP networks.	TS 102 822-6-1

Tool	Description of tool	Document reference
Transport protocol - encoding of metadata	The ability to compress and represent the data so that it can be passed from device to device efficiently	TS 102 822-6-1
Usage history metadata	*TV-Anytime* specific information generated in a device that describes the actions by a consumer while interacting with that device.	TS 102 822-3-1
User preference metadata	*TV-Anytime* - specific information that describes a user's profile which has either been entered by themselves or generated by their *TV-Anytime* device (such as the consumer's demographic data).	TS 102 822-3-1
Rights Management and Protection Information for Broadcast Applications	The minimum set of *TV-Anytime* specified usage rules and conditions required to enable protection of broadcast digital television content within a *TV-Anytime* rights Management and protection complaint domain.	TS 102 822-5

Annex A (informative): Bibliography

- ETSI TS 102 822-2: "Broadcast and On-line Services: Search, select, and rightful use of content on personal storage systems ("*TV-Anytime* Phase 1"); Part 2: System description".
- ETSI TS 102 822-5: "Broadcast and On-line Services: Search, select, acquisition, and rightful use of content - on personal storage systems ("*TV-Anytime* Phase 1"); Part 5: Rights management".

List of tables

History

Document history		
V1.1.1	October 2003	Publication
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