



DVB Targeted Advertising

An introduction

Welcome

Running Order

1. Commercial background (Angelo Pettazzi)
2. Presentation on part 1 - Signalling (Martin Gold)
3. Presentation on part 2 - Ad Server (Matt Poole)
4. Coming soon - SoME, TA in DVB-I (Angelo Pettazzi)
5. Q/A (Panel)

Commercial Background to DVB-TA

Why a TA standard for Broadcasting

- TA is a solid reality in on-line video, a recognised relevant business model
- In 2017, a DVB study mission reported a lack of a standard technology framework to enable TA at least for horizontal broadcast business models.
- DVB CM-TA commercial group started in 2018 to identifying and defining relevant TA business use cases on which to build the future DVB-TA specification in the context of broadcast and broadband connected TV.

Points to be Addressed in CM-TA

- End-to-end in-band signaling, (e.g. SCTE 35) to be propagated, and translated if needed, to all TV receivers in order to correctly trigger DAS
- “Seamless” switching or substitution in the receiver (e.g. buffer preload, fast switching API)
- BC management of viewer experience i.e. “reach vs quality”, report back, use of standardized interfaces with existing digital advertising systems (ad servers and protocols), last minute insertion possibility, cognizant of GDPR
- The need for creating commercial agreement with Consumer Electronics Manufacturers

How TA Work was Organized – The Outcome

- DVB would work on standardizing broadcast signaling used by receivers to identify placement opportunities within a service in a DVB Transport Stream.

(Dynamic substitution of content in linear broadcast, Part 2: Carriage and signalling of placement opportunity information in DVB Transport Streams, DVB Document A178-2, February 2020)

- DVB would work on providing guidance relating to the interface with prevailing digital advertising decisioning systems and advice on the preparation of media for an optimized viewer experience.

(Digital Video Broadcasting (DVB); Dynamic substitution of content in linear broadcast, Part 1: Interfacing an advert decisioning service and optimal preparation, DVB Document A178-1, November 2019).

- HbbTV would work on developing the HbbTV terminal specification.

(HbbTV- Targeted Advertising, Part 1 – Functional Requirements and 4) HbbTV Targeted Advertising, Part 2 – Non-functional Requirements).

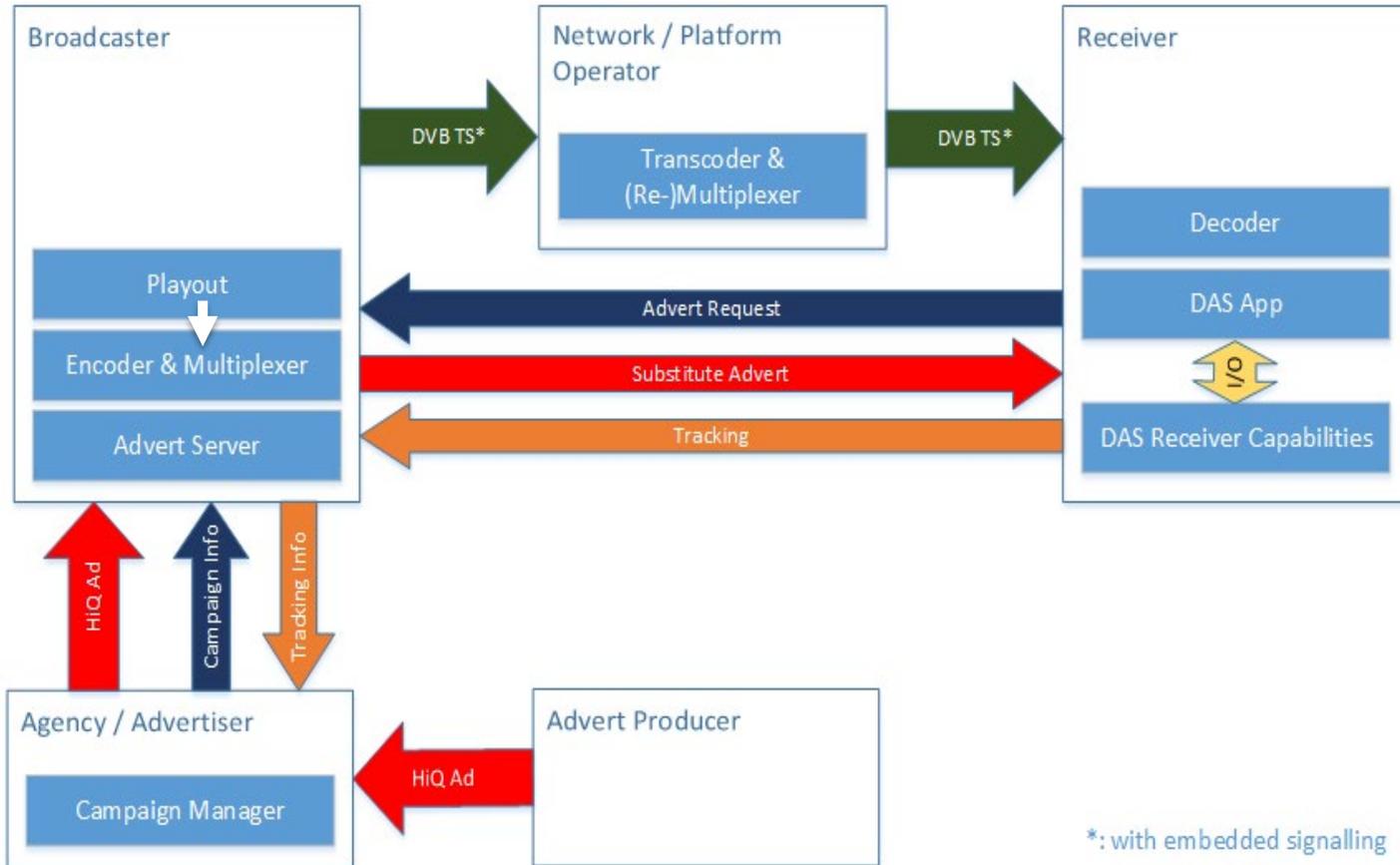


DVB-TA Part 1 - Signalling

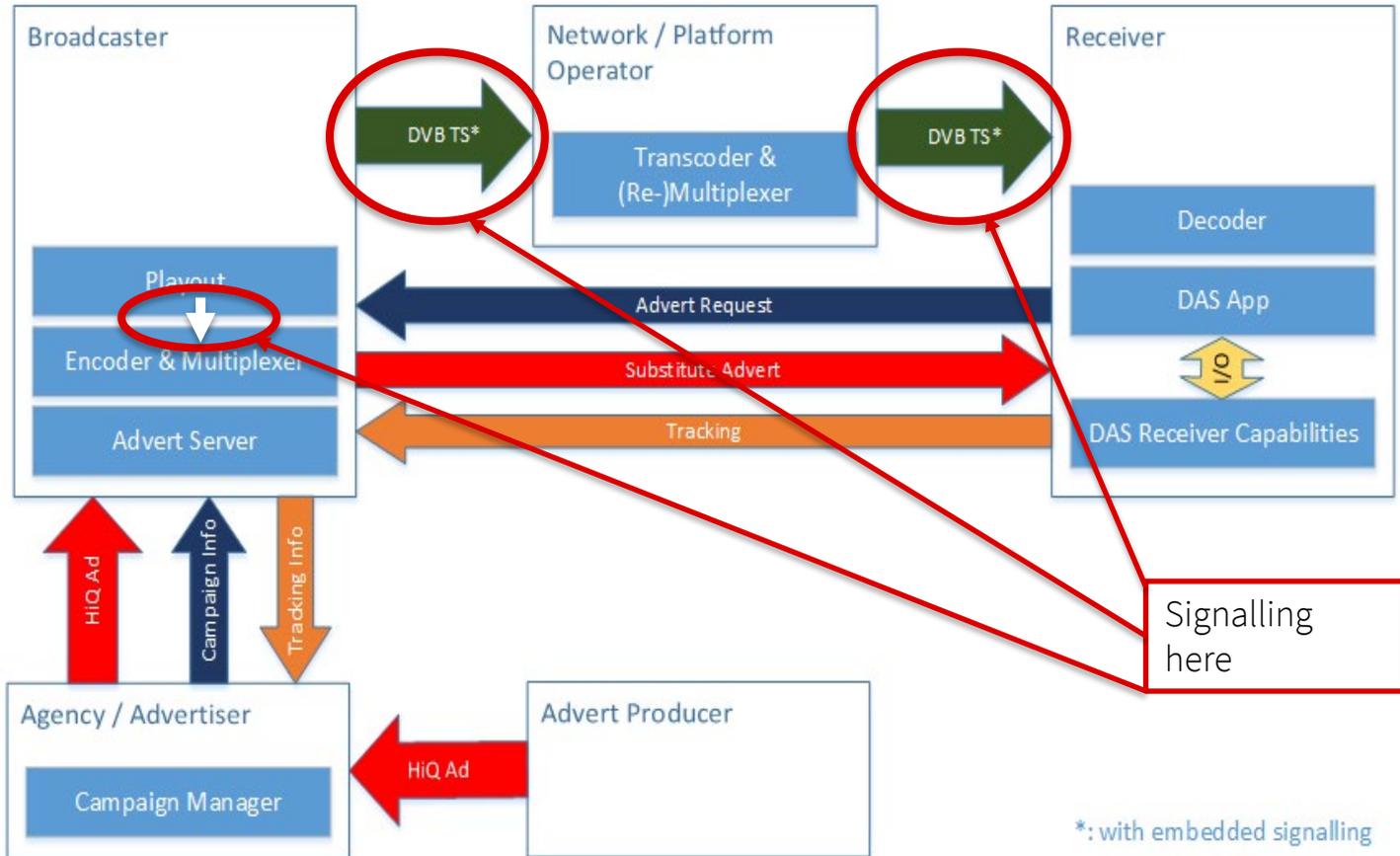
Development of Signalling Specification

- Developed in TM-GBS
 - Kick-off in November 2018
 - Signalling work initially in parallel with technical feasibility study for SoME-based signalling.
 - Specification completed after 2 further F2F meetings and about 20 shorter remote meetings.
- Broadcast signalling specification is TM-GBS1029, TM5756, A178-2
 - Approved in Jan/Feb 2020 cycle of meetings.
- Publication as TS progressing through ETSI

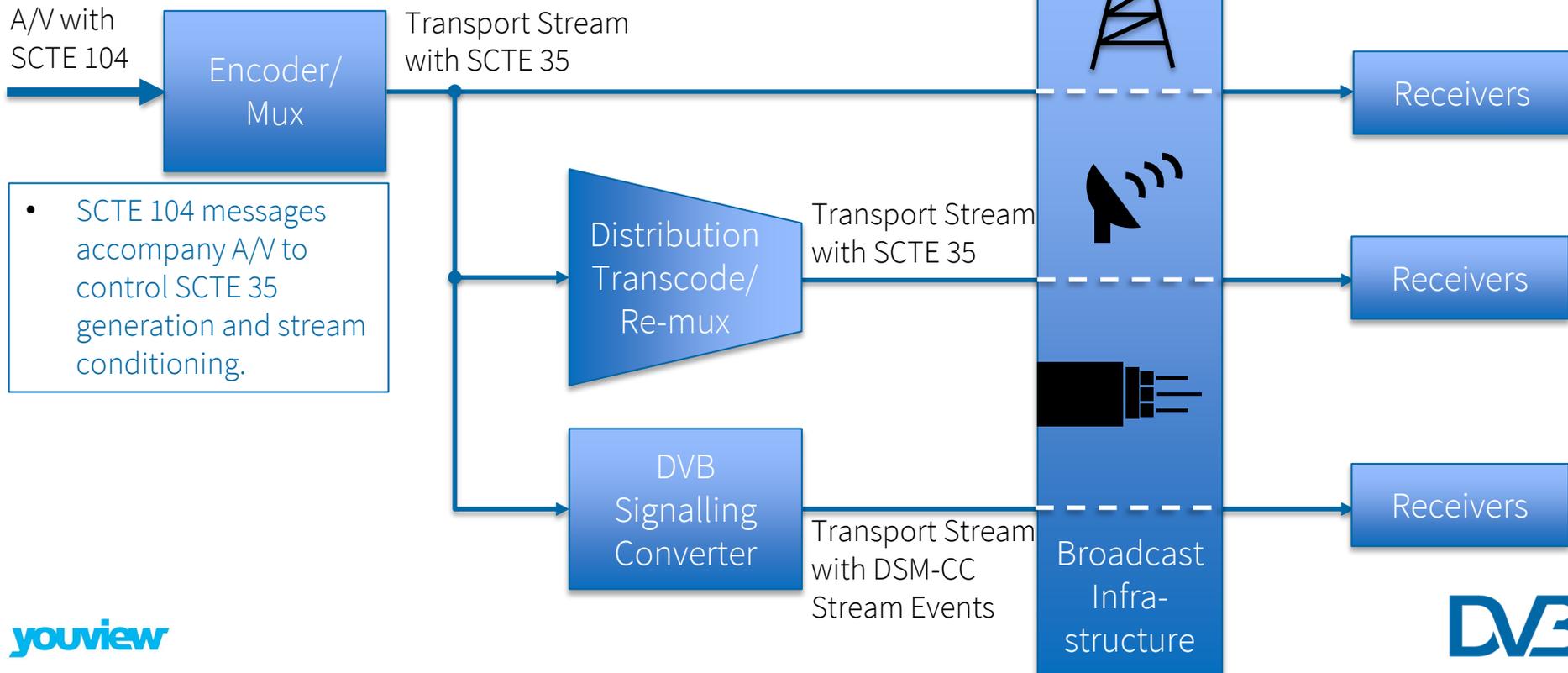
DVB TA Reference Architecture



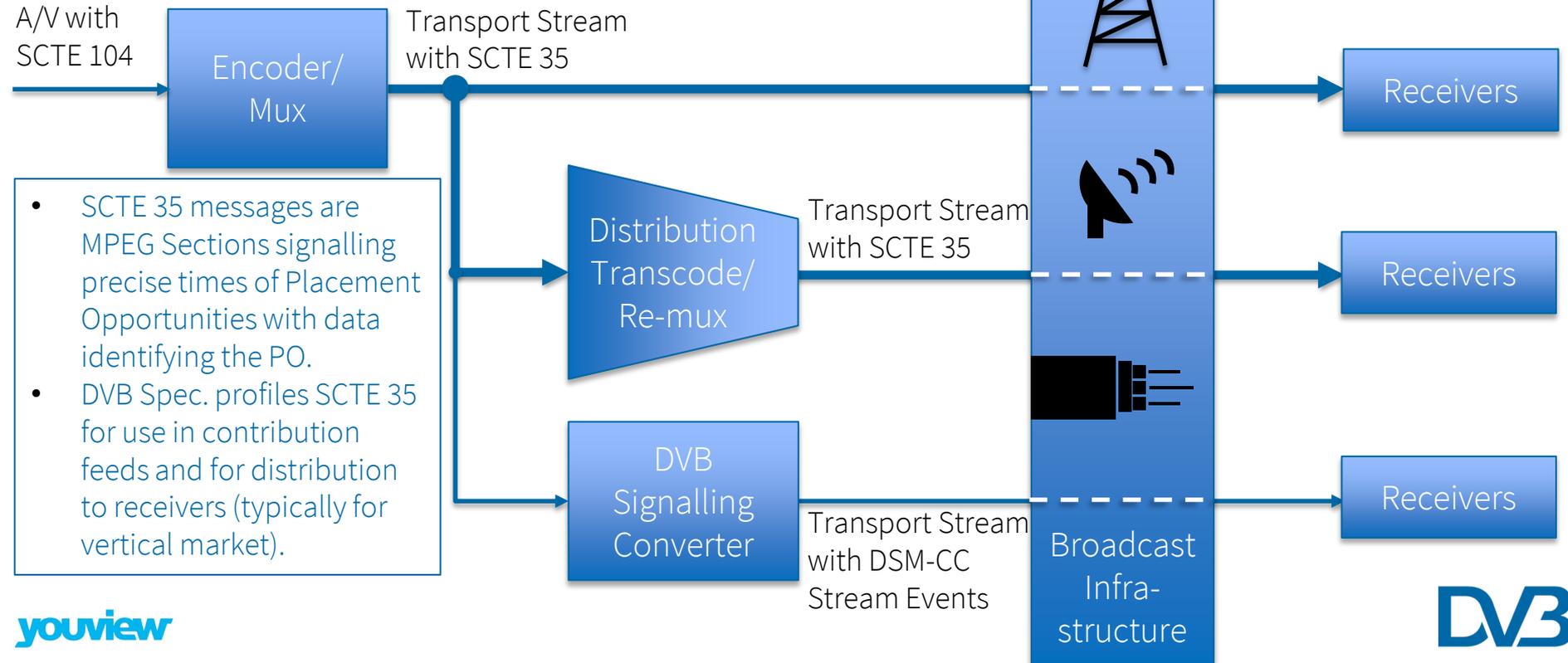
DVB TA Reference Architecture



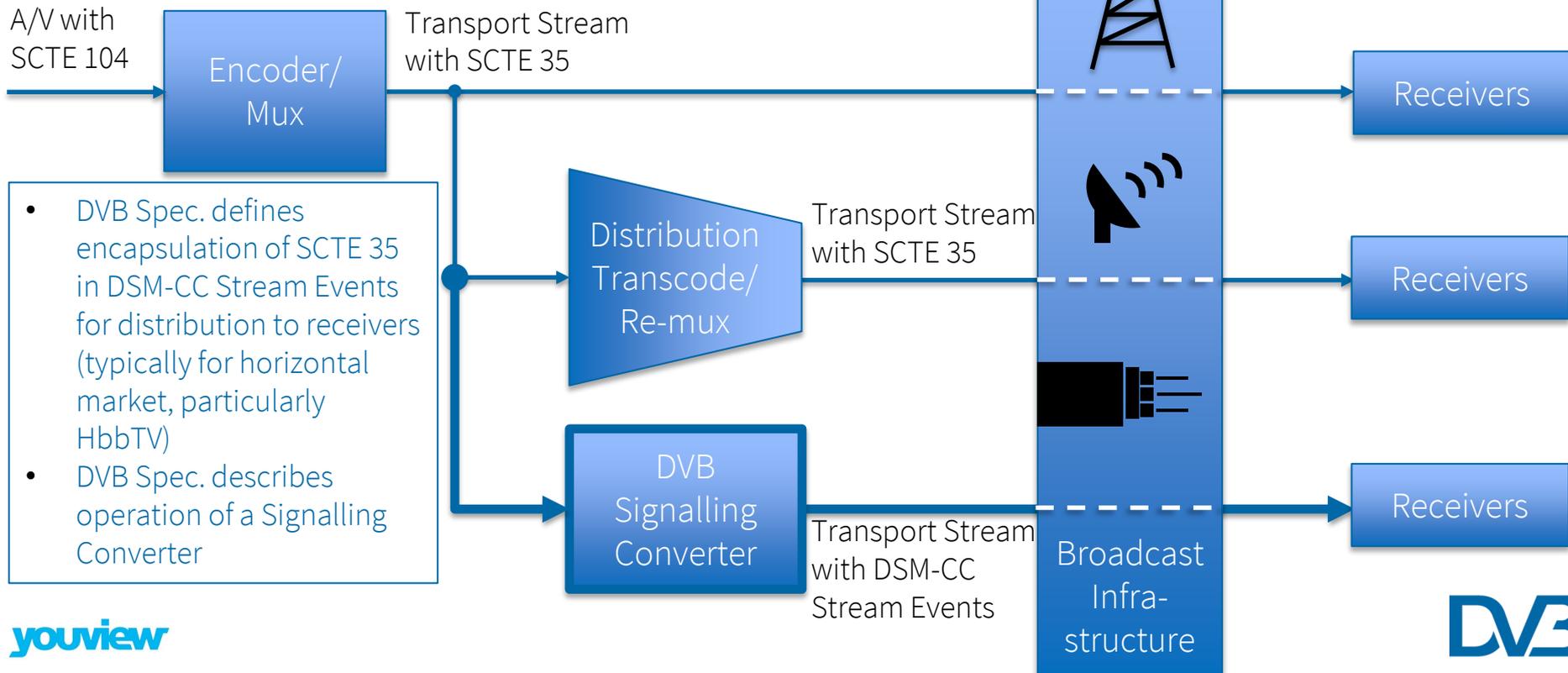
DVB TA Signalling



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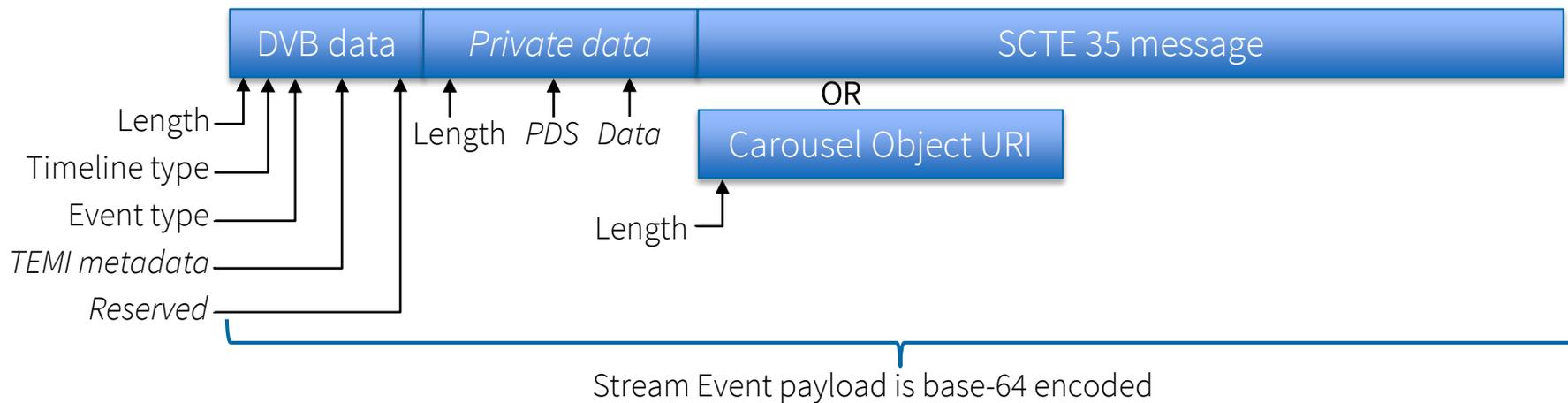
DVB TA Signalling



DVB Usage of SCTE 35

- Profiling of two types of Placement Opportunity Signalling
 - Segmentation Descriptor in Time Signal Message
 - Splice Insert Message
- Optional additional descriptor defined for Splice Insert Message to make these equivalent for PO signalling
- SCTE 35 can also be used for signalling other content boundaries
- Specification of URI format of UPID
 - urn: <reverse domain name of broadcaster>: <identifier>
- Transcoding/re-multiplexing facilitated by PTS adjustment field

DVB TA DSM-CC Stream Event



- Encapsulation of SCTE 35 message prepended with DVB-defined data structure
- Support for time reference to PTS or to a TEMI timeline value in the DSM-CC Stream Event
 - Metadata to identify the TEMI timeline
- Message is base-64 encoded to suit receiver APIs.
- Indirect carriage option for large SCTE 35 messages >180 bytes

Conversion from Contribution to Distribution Signalling

SCTE 35 Distribution Signalling

- Messages are in same format for Contribution and Distribution.
- Contribution may contain additional messages, which could be filtered out.
 - Use of multiple PIDs recommended for different SCTE 35 consumers
- Re-multiplex/transcode operations may use SCTE 35 pts_adjustment field

DSM-CC Stream Event Distribution Signalling

- Operation of a converter described for generation of DSM-CC Stream Events referencing both TEMI timeline and PTS
 - Transcoding/re-multiplexing requirements differ for these – deployments may prefer one or other.
 - HbbTV supports both types of time reference.

DVB-TA Part 2 - Ad Server Integration

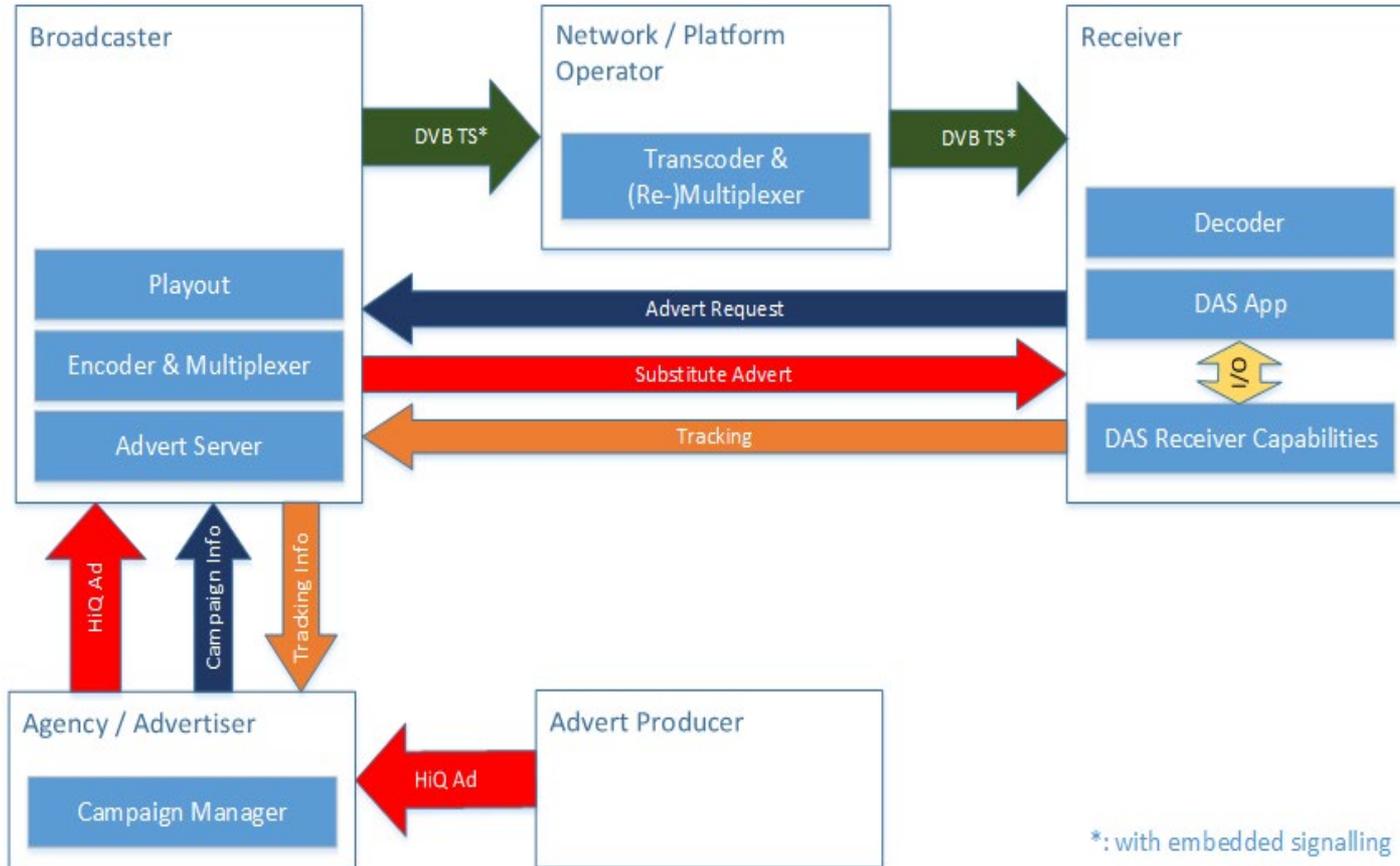
DVB-TA Part 2 - Introduction

- Originally developed within as Task Force the TM-IPI working group
- First published as A178-1 as a DVB BlueBook November 2019
- Now maintained within its own WG along with the signalling spec - TM-TA
- Progressing through ETSI alongside our signalling spec (Part numbers reversed!)
- Intended as a guide to using existing ad tech in the context of broadcast advert substitution.

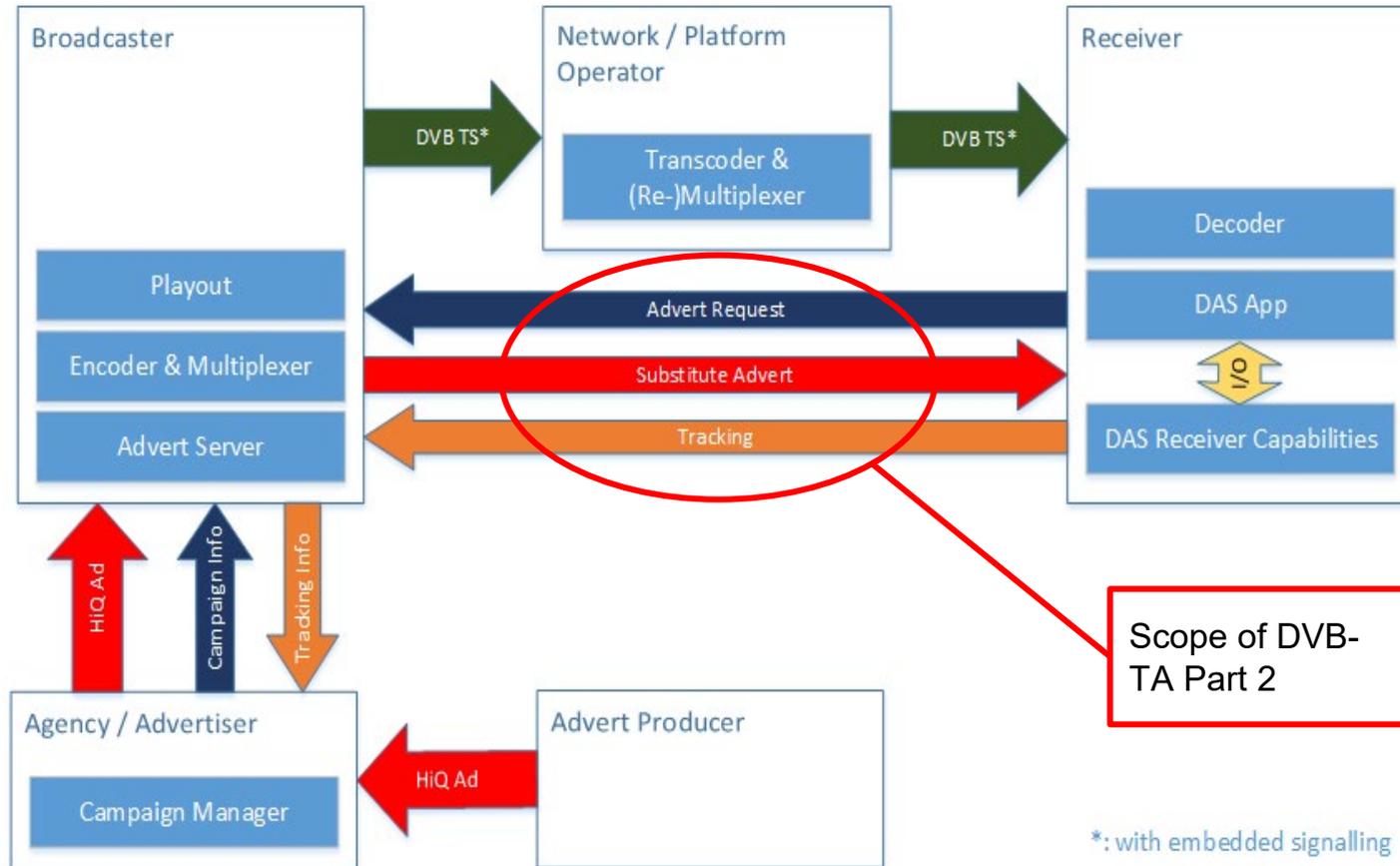
DVB-TA Part 2 - what we'll cover

1. We will look at the main interfaces and discuss some potentially new considerations within the context of broadcast advert substitution.
2. A key concept in the commercial requirements Reach vs Quality trade off
3. General guidance for broadcast streams and receivers.

DVB TA Reference Architecture



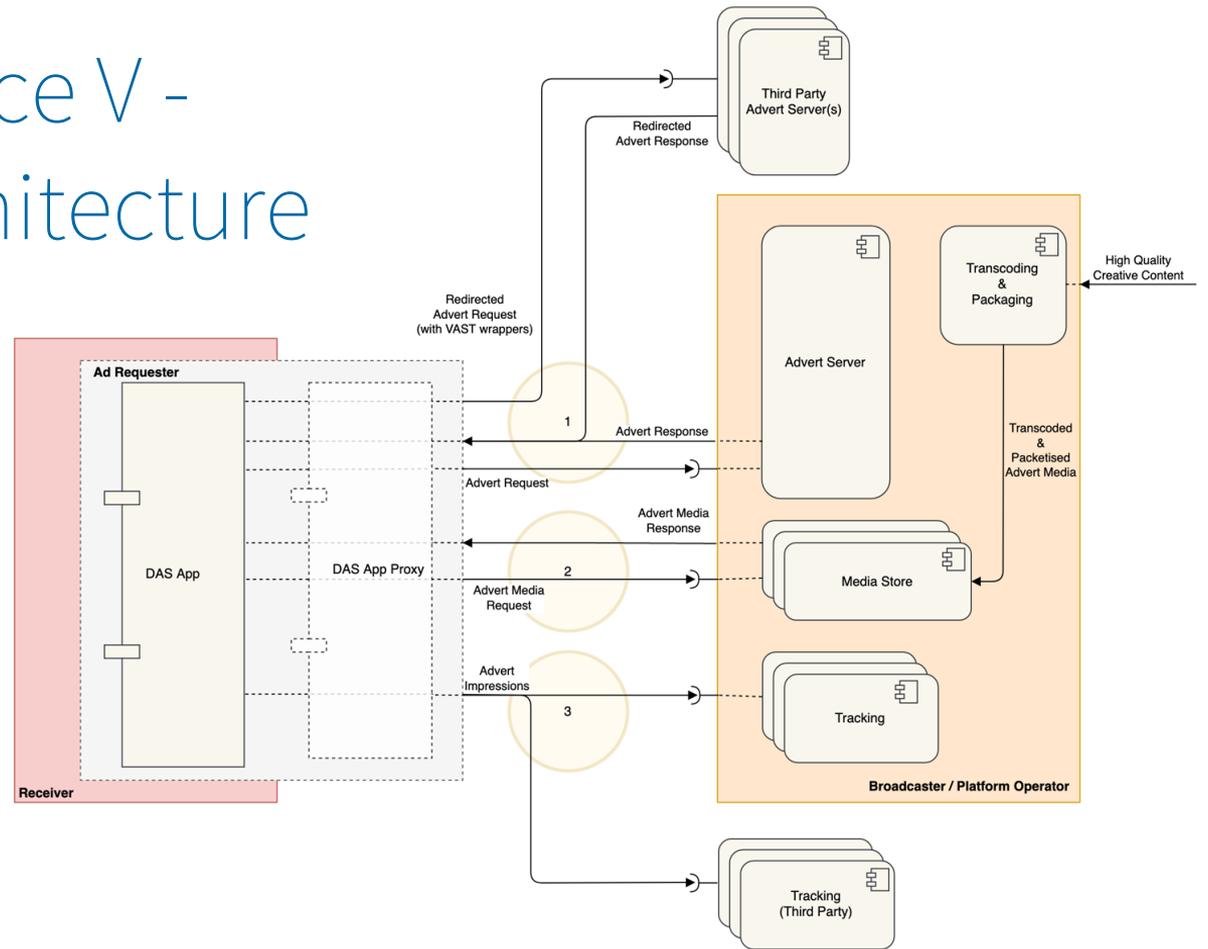
DVB TA Reference Architecture - Interface V



DVB-TA Part 2 - 3 interfaces

1. AdRequest
2. AdResponse
3. Measurement & Reporting

DVB TA Interface V - Reference Architecture



DVB-TA Part 2 - AdRequest

A HTTP request made to the Ad Decisioning Server. In DVB-TA Part 2 this is made by the actor AdRequestor which can be one of two things:

1. DAS App
2. DAS App Proxy

Either one of these can be where a VAST response is processed. DAS App Proxy is perhaps a new concept:

1. A way of managing scale
2. A possible way for addressing privacy concerns
3. An abstraction layer for service providers or platform operators.

DVB-TA Part 2 - AdResponse

The DVB-TA AdResponse is a VAST formatted HTTP response body which contains MediaFiles (primarily containing locations to advert media) and Impression Urls for measurement.

The important thing here is matching advert media, as far as possible, with that of the broadcast. This means:

1. Codec and resolution
 - a. For SD with MPEG-2 video and MPEG-1 layer 2 audio a match might not be possible
2. Subtitles and Audio Description
 - a. It may be necessary to provide ad media encoded with AD as some receivers not be able manage multiple alternate audio tracks.
3. Adaptive Ad Media
 - a. The lowest bit-rate representation should provide an acceptable quality in comparison with the broadcast service

DVB-TA Part 2 - Measurement & Reporting

Technically speaking the approach to measurement is the same in digital where the DAS app parses out impression URLs from the ad response and sends impression counts at the appropriate times (e.g. quartile tracking).

The interesting consideration is around privacy and data protection:

1. You may need to consider how to derive consent for certain types of data being collected or for the level of targeting/profiling being used.
2. Consider how to sensitively introduce such concepts to the viewer.
3. DVB-TA recommends secure HTTP requests in all ad calls and reporting.

DVB-TA Part 2 - Reach vs Quality trade off

A key concept within DVB-TA recognises that the full universe of connected receivers will vary in their ability to deliver seamless ad substitutions, which are also affected by the broadcast and advert media in use.

DVB-TA is designed to allow Broadcasters to make the choice as to whether they want more commercial reach - at the cost of not-seamless transitions - vs lower commercial reach with greater confidence of seamless transitions.

- This may differ between vertical and horizontal market deployments.
- As we have seen close matching of broadcast codec is not always possible.
- Sufficient available memory to fully preload

To facilitate this there must be sufficient capability / profile level information available to the DAS app to allow the trade off to occur. There are two approaches for achieving this with the ad server discussed in Part 2:

1. DAS app approach to reach/quality trade off
 - a. This approach can reduce the number of parameters required in the VAST request but may lead to more advert decisions served than can be fulfilled with a successful substitution.
2. Advert Server approach to reach/quality trade off
 - a. This approach enables tighter inventory management
 - b. Not all advert servers have the same level of configurability on capabilities

DVB-TA Part 2 - General guidance for broadcast streams and receivers

- Timing of signalling is key to allow for ad server request and download of media
- Conditioning of broadcast streams (e.g. for single decoder architectures)
 - RAP at any advert spot intended for substitution.
 - Brief audio silence (start and end) to accommodate differing lengths of audio and video frames.
 - “Sacrificial material”
- Dual decoders *may help* but not all dual decoders are created equal.

Coming Soon to DVB-TA

SoME/Watermarking for TA

- An additional technical solution for TA based on watermarking, or Signaling on Media Essence (SoME), where signaling messages are embedded in the essence of the video or audio signal.
- Useful when TA signaling cannot reach a TV sets that receive broadcasts from a set-top box.
- DVB CM-TA agreed on a set of specific commercial requirements, now in the hands of the DVB TM-TA group that is translating them into a new DVB technical specification for this specific TA use case.

Use DVB-TA with DVB-I

- A joint CM-TA / CM-I effort to check commercial interest in extending DVB-TA to cover DVB-I
- Commercial analysis started in April this year
- Current work to identify and agree on relevant use cases (DAI and DAS, server and client side)
- Generate a consolidated list of Commercial Requirements for TA with DVB-I.
- Technical work foreseeable starting by end of the year

DVB-TA Q&A