Qualcomm

Overview of DAInty API

(for W3C Media Timed Events Task Force)

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Outline

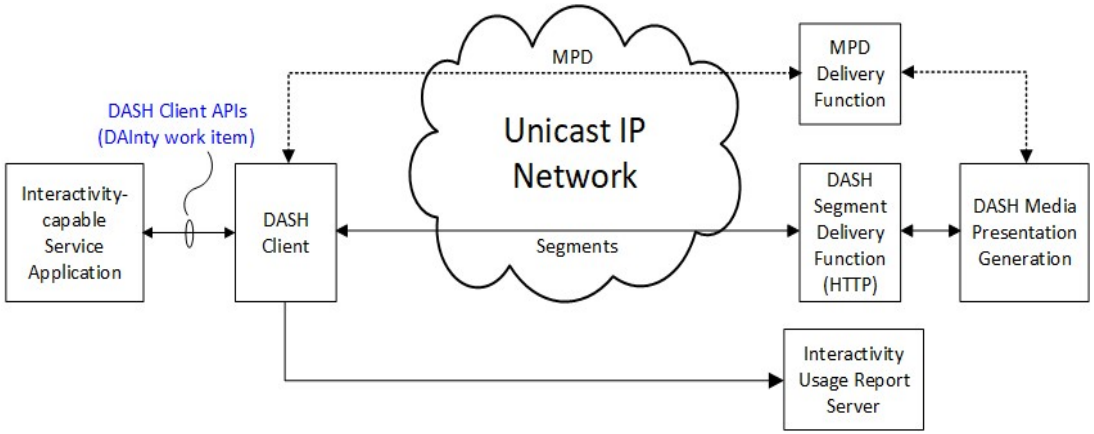
- Background
- API Functionality
- Current status
  - DASH Event Processing Model
  - API Variants
- Next steps

Background

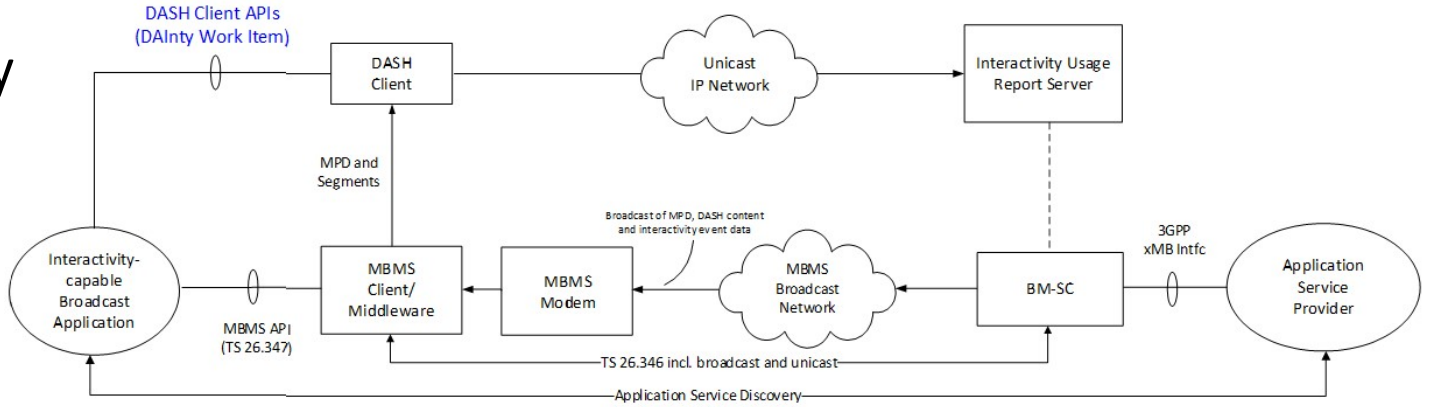
- The IOP (InterOp) WG of the DASH-IF (DASH Industry Forum) has an ongoing work item ***DAInty*** *(*'DASH APIs for Interactivity')
- Task is to specify a set of APIs between the DASH client/player and interactivity-capable applications
- Origin: related 3GPP work item on Service Interactivity
  - Objective: provide service enablers for user engagement with auxiliary content and UIs on mobile device during live or time-shifted viewing of streaming content delivered over 3GPP broadcast or unicast bearers, and the measurement & reporting of such interactive consumption
  - Additional info can be found here:
    - Work item description: SP-170796
    - Technical Report from related study: TR 26.953
- DASH-IF was requested by 3GPP to support the related API specification due to related technical expertise in the former organization

Architecture View

Unicast/HTTP delivery of interactivity-enabled DASH service



Broadcast delivery (via 3GPP MBMS) of interactivity-enabled DASH service

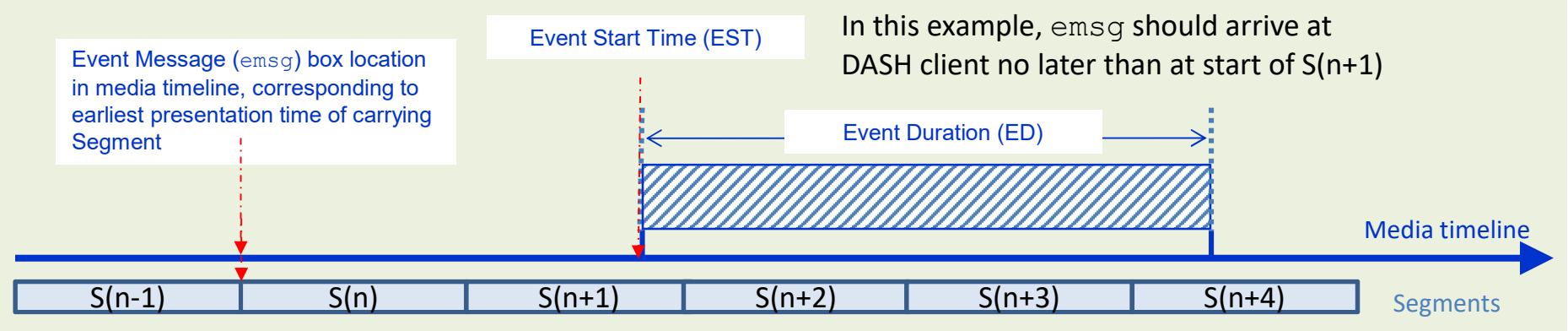


DASH Interactivity API Functionality

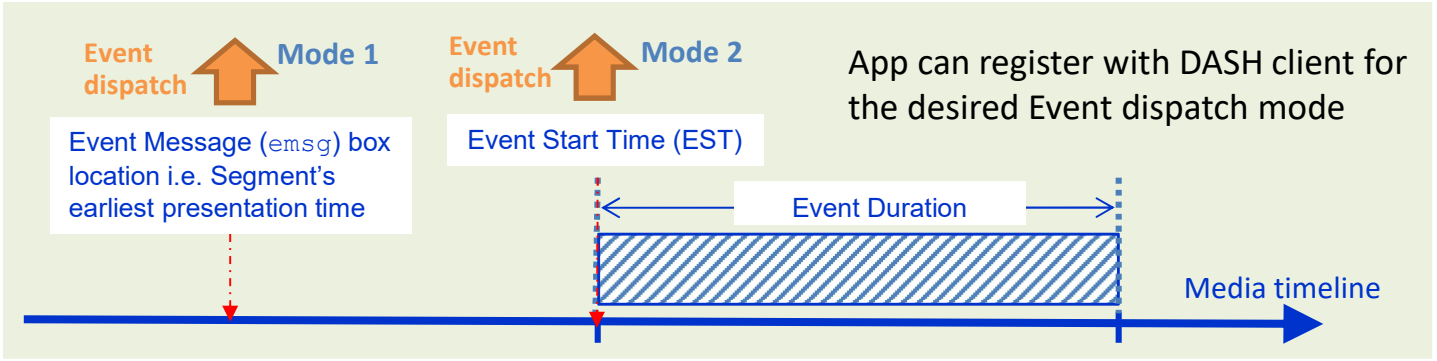
- Three APIs to be developed in support of requested functionality from 3GPP:
  1. Application subscription/DASH client dispatch of DASH Event Stream messages containing interactivity information.
     - Inband Event Stream and/or MPD Events
  2. Application subscription/DASH client dispatch of ISOBMFF Timed Metadata track providing similar functionality to DASH Event Stream.
  3. Exchange between App and DASH client of interactivity usage metrics to be measured (by App), and subsequent recording of interactivity-specific usage information (delivered to DASH client).
     - Provide means for App to rely on DASH client to in turn perform reporting of interactivity usage data to a network server

DASH Event Processing Model

- DASH-IF IOP group defined an Event processing model by DASH clients to guide the Event API definition
  - Event timing model (shown below for inband Events):



  - Event dispatch modes (shown for inband Events):



Work Status

- DAInty APIs to be specified for both Web app- and Native app-based interactivity applications
  - Former variant of API to be specified in dash.js (open source DASH player written in Javascript, supported by DASH-IF) via extension to the MediaPlayer Module
    - Defined application Event APIs in dash.js already includes SCTE-35
  - Latter variant to specified in IDL (Interface Definition Language), as high-level interface definitions (i.e., non implementation-specific) in a programming language and OS platform independent manner
    - Tools are available to map IDL to most major programming languages
- Present focus of API work: application Event API
- Later on to tackle time metadata track and interactivity usage/measurement APIs

Next Steps

- Complete Event API specification in both dash.js and IDL
- Start API development for remaining functionality:
  - Subscription to/dispatch of Timed Metadata track
  - Exchange of interactivity usage metrics to be measured, and subsequent measurements of interactivity-related usage information, between App and DASH client
- Targeted completion timeframe: Dec 2018