RTCP XR for Inter-Destination Media Synchronization (IDMS)

draft-brandenburg-avt-rtcp-for-idms-02
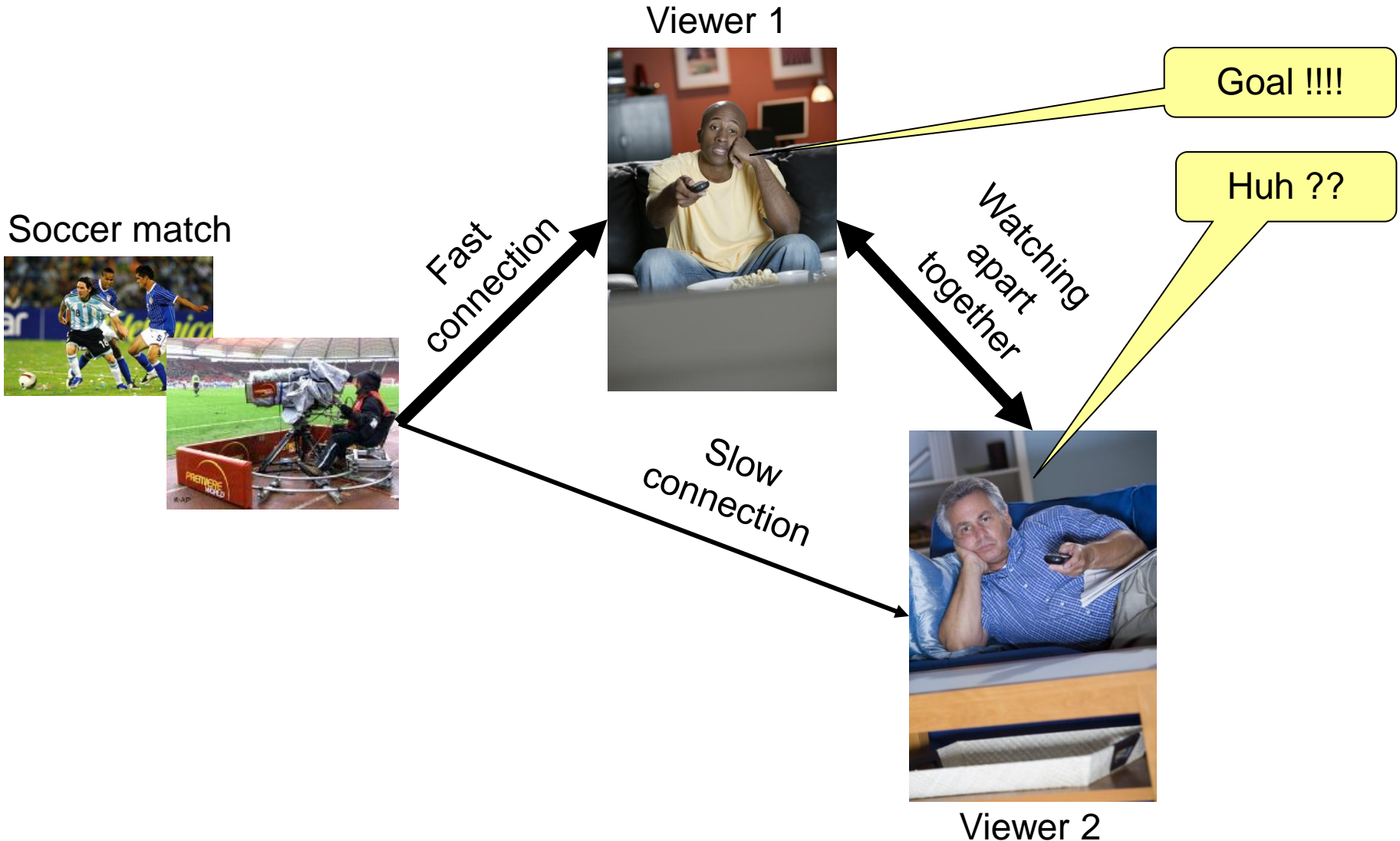
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Relation to ETSI

- RTCP XR for IDMS already standardized in ETSI TISPAN

- Included in (IMS-based) IPTV standard (annex W of TS 183 063)

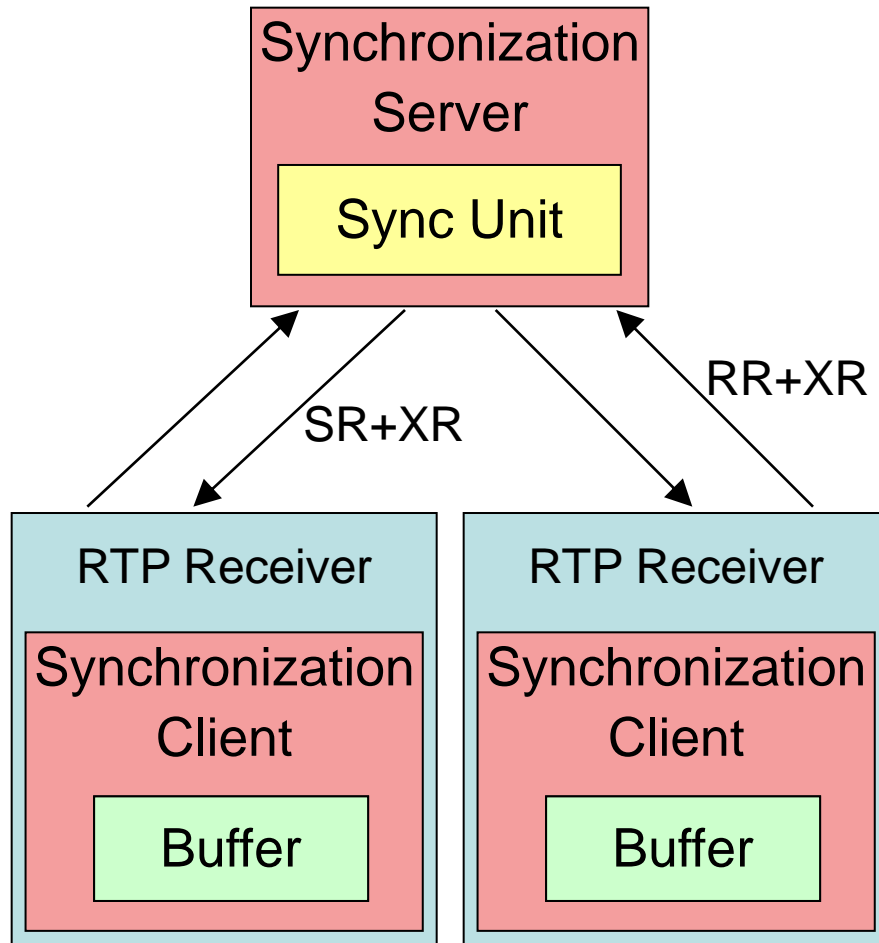- IANA registration based on TS 183 063

- Then why IETF?

Why Inter-Destination Media Synchronization?

RTCP XR block for IDMS

- Allows clients to communicate their play-out/packet-arrival information
- Allows server-function to collect play-out information, calculate reference client and distribute this information to clients
- Actual synchronization algorithm is out-of-scope

- Both message types using same XR block
- Allow for multiple synchronization groups within one RTP stream

IDMS (Maestro) architecture

Synchronization
Server

Sync Unit

RTP Receiver

Synchronization
Client

Buffer

RTP Receiver

Synchronization
Client

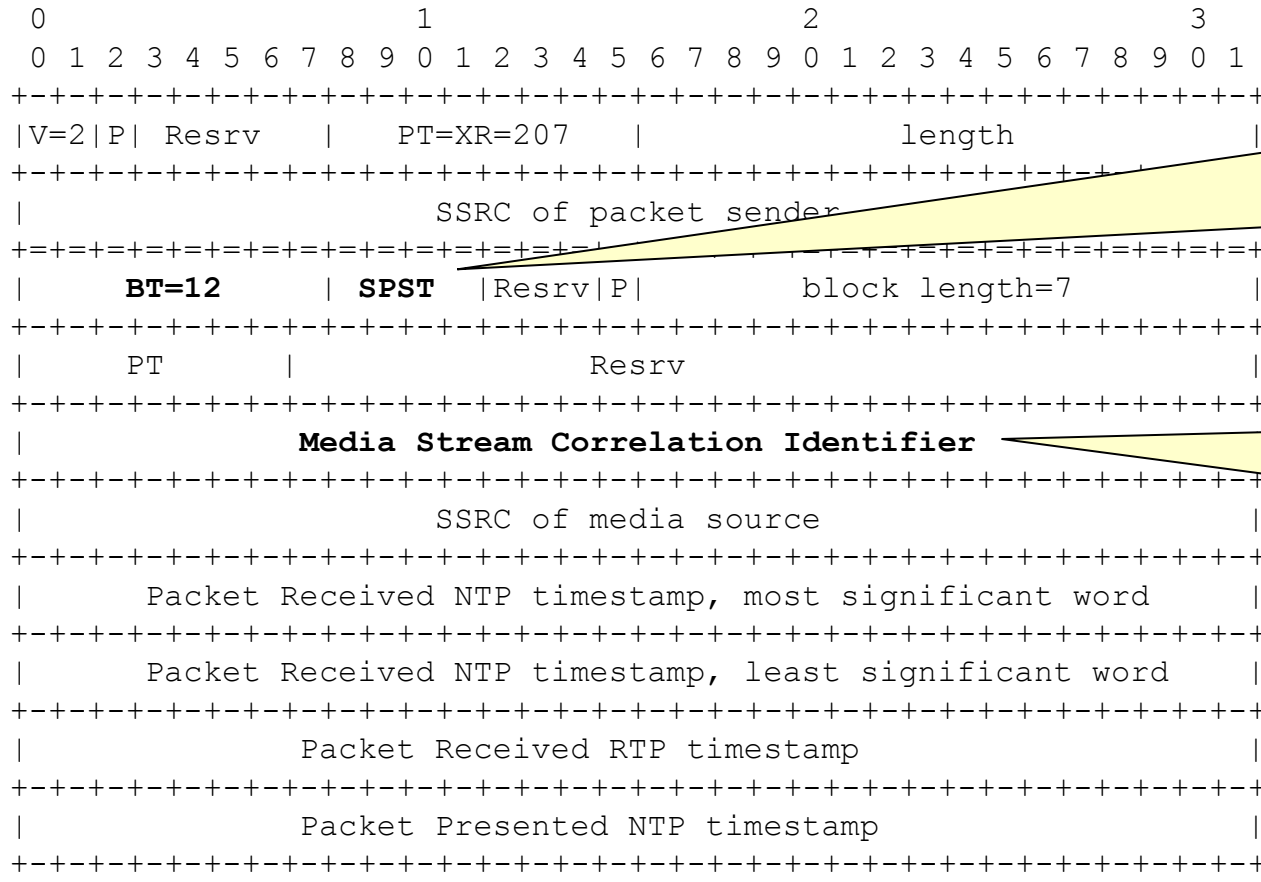Buffer

SR+XR

RR+XR

Synchronization Client (SC)
- Measure play-out time or arrival time
- Set play-out buffer
- NTP synchronized

Synchronization Server (SS)
- Can be either RTP Sender, Feedback Target or Monitor
- Collect transport delay info
- Calculate reference client

Other architectures are possible

XR block specification

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|V=2|P| Resrv    |   PT=XR=207    |             length            |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                    SSRC of packet sender                       |
+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+
|     BT=12      |     SPST    |Resrv|P|       block length=7      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|     PT        |                 Resrv                           |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|              Media Stream Correlation Identifier               |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                    SSRC of media source                        |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|     Packet Received NTP timestamp, most significant word       |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|     Packet Received NTP timestamp, least significant word      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|              Packet Received RTP timestamp                      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|              Packet Presented NTP timestamp                     |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Synchronization Sender Packet Type: Identifies the role of this XR block (SS, SC or Mixer)

Identifies to which synchronization group a client belongs

Report on media reception or playout time

IETF?

- Possible scenario: AVT WG takes over from ETSI TISPAN, TS 183 063 references resulting RFC

Back-up slides

Social TV ...

- Humans are social beings. We want to interact and communicate with others, so we can share our experiences.

  – Nowadays, watching television has become an individual experience.

- Imagine that you can share your TV experience with others, even if they are separated in location and time...!

Social TV has Arrived ?!

"You can then sync your iPlayer with theirs and chat with them in real time, all within the iPlayer site"

"The main novelty that the [iSession] demo shows is the iNEM4U platform synchronizing the content across different locations"

SEVENTH FRAMEWORK PROGRAMME

"An official ABC app that uses the iPad's microphone to figure out exactly what you're watching (whether live or recorded) and offer interactive content on the fly"

"YouTube Social: When you play, pause or seek, so does everyone else!"

"Fans of specific TV shows from different timezones are saving their favourite shows on their PVRs and then arranging common viewing times with their friends to watch the shows whilst discussing the action together on Skype."

Social TV needs Group Sync

Group Synchronization
==
Inter-Destination
Media Synchronisation

(IDMS, terminology used by ETSI TISPAN)

Definition*: *the synchronization of the play-out processes of different streams in different receivers,at the same time, to achieve fairness among the receivers.*

Y-axis: **Mean Delay compared to DVB-T [s]** (4, 3, 2, 1, 0, -1, -2)

X-axis: **Video signal technology** — analog cable, DVB-C, DVB-C HD, DVB-H, IPTV, Sattelite

* Fernando Boronat, Jaime Lloret, Miguel García, Multimedia group and inter-stream synchronization techniques:
A comparative study, Information Systems, Vol 34, Issue 1 (March 2009)