RTP Taxonomy
&
Relationships

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@Authors

CONTEXT

In the context of RTP usage, there exists

- **Terminology Ambiguity**
  Ex: Media Stream
  RTP, SDP, WebRTC, CLUE ??

- **Relationship Ambiguity**
  Ex: Session Multiplexing
  MediaStream, RTP Session, Transport

This document …

Is about defining high-level concepts and their relationships in the context of RTP.

Is not about redefining terminologies existing across the WGs.

Is about explaining the ambiguity by cross referencing.

Is not about justifying ambiguity currently existing

Is about providing a framework for describing concepts and referencing them in the current and future RTP related documents.

Concepts

Capture Device

- The physical source of stream of media data of one type such as a camera or microphone.

- Alternate Usages
  - CLUE WG uses the same name for the same purpose
  - WebRTC uses "Recording Device" for this purpose

Media Source

- Source of a raw stream of media data as generated by a single capture device or by a conceptual source.

- Alternate Usages
  - RTCMediaStreamTrack (WebRTC)
  - Media Capture, Audio Capture, Video Capture (CLUE)
  - One m=line can describe one Media Source or multiple of them (ex:RFC5576)

Media Stream

- Media from a Media Source is encoded and packetized to produce one or more Media Streams.

- Alternate Usages
    - Stream (CLUE)
    - Source (RFC3550)
    - One m=line maps to one Media Stream OR multiple of them (ex:RFC5576)

Media Provider

- Logical component within a RTP Stack that defines coding of one or more Media Sources.

- Alternate Usages
  - Capture Encoding and Encoding Groups (CLUE)

  - Within SDP a m=line describes information for encoding purposes.

RTP Session

- An RTP Session is an association among a group of participants communicating with RTP.

- Alternate Usages
    - One m=line maps to one RTP Session
        OR
    - Multiple m=lines maps to one RTP session (ex: BUNDLE)

Media Transport

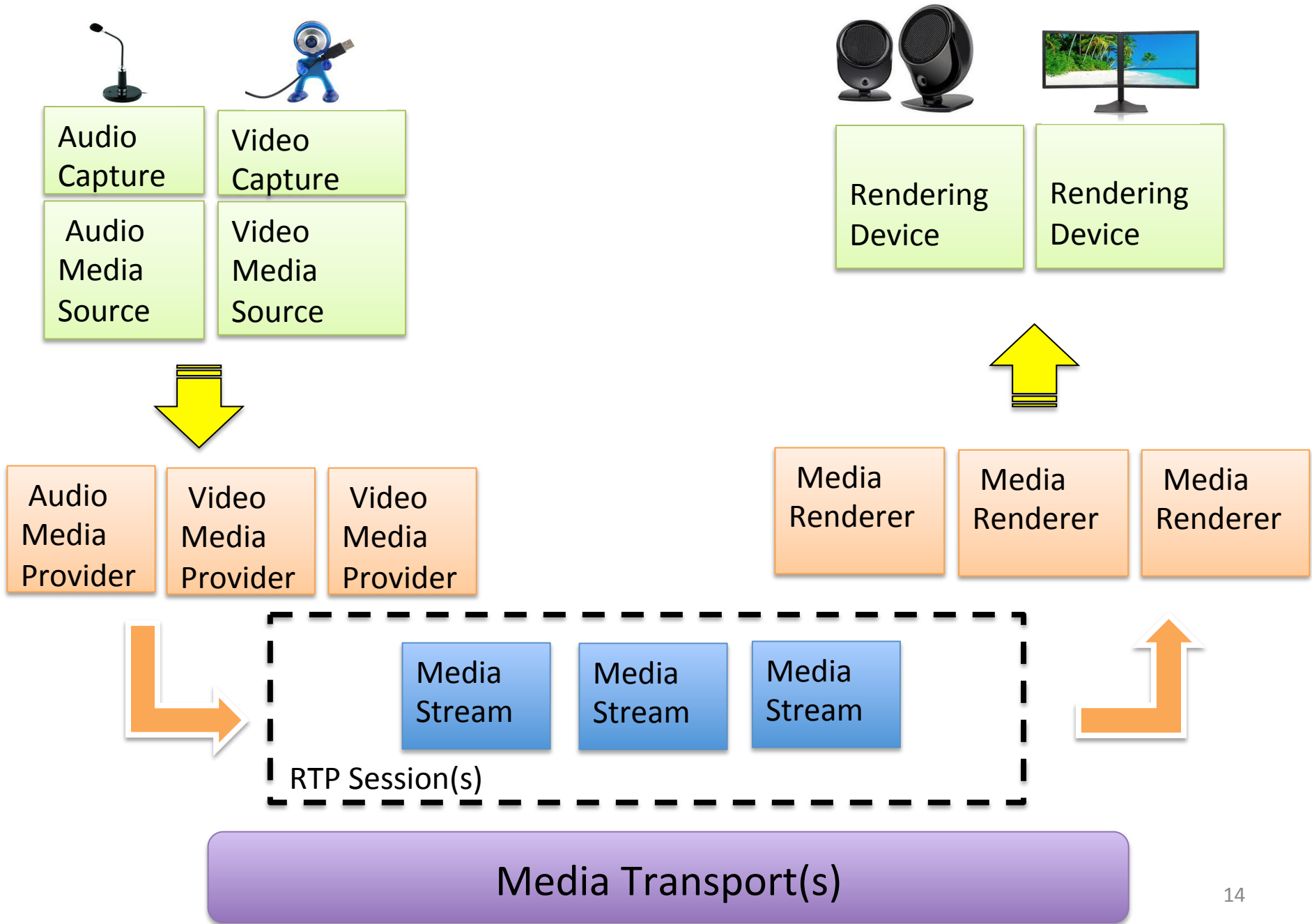- Defines end-to-end transport for carrying one or more RTP Sessions.

Media Renderer

- Logical component within the RTP Stack that is responsible for decoding the RTP Payload within the incoming Media Streams to generate media data suitable for eventual rendering.

- Alternate Usages
  - Within SDP a m=line describes information for decoding purposes.

Rendering Device

- Represents a physical rendering device such as a display or a speaker

Relationships

Concepts – Capture to Render

Audio Capture	Video Capture
Audio Media Source	Video Media Source

Rendering Device	Rendering Device

Audio Media Provider	Video Media Provider	Video Media Provider

Media Renderer	Media Renderer	Media Renderer

RTP Session(s)

Media Stream	Media Stream	Media Stream

Media Transport(s)

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Synchronization Context

A synchronization context defines requirement on a strong timing relationship between the related entities, typically requiring alignment of clock sources

RTCP CNAME   CLUE Scenes

Clock Source Signaling   RTCMediaStream

SDP Grouping Mechanism
(RFC5888, RFC5576)

Containment Context

A containment relationship allows composing of multiple concepts into a larger concept
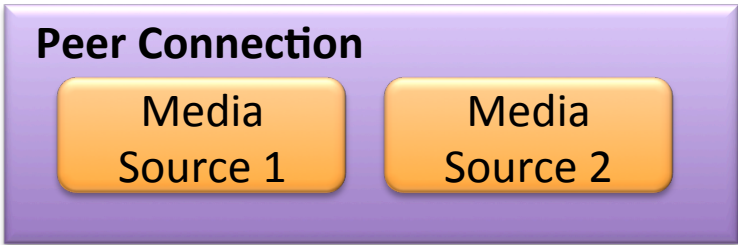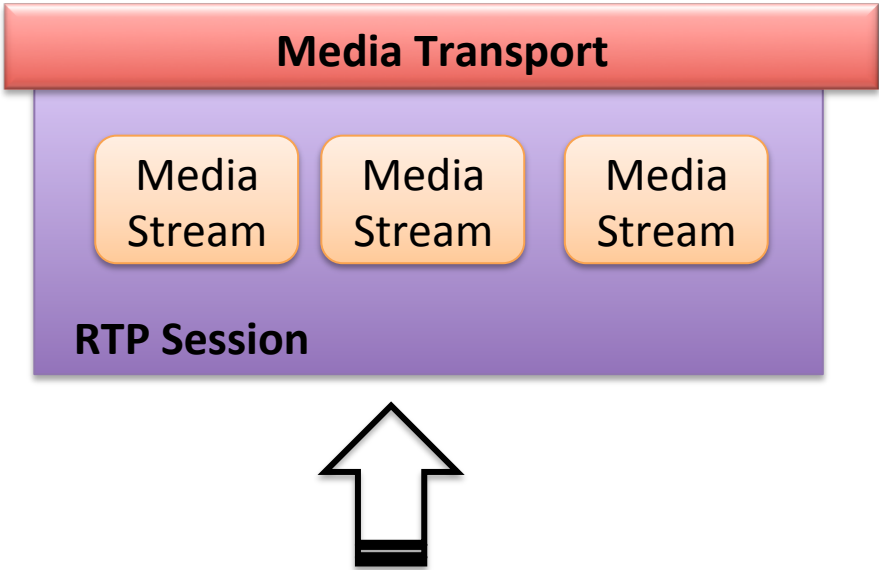
Media Stream Multiplexing

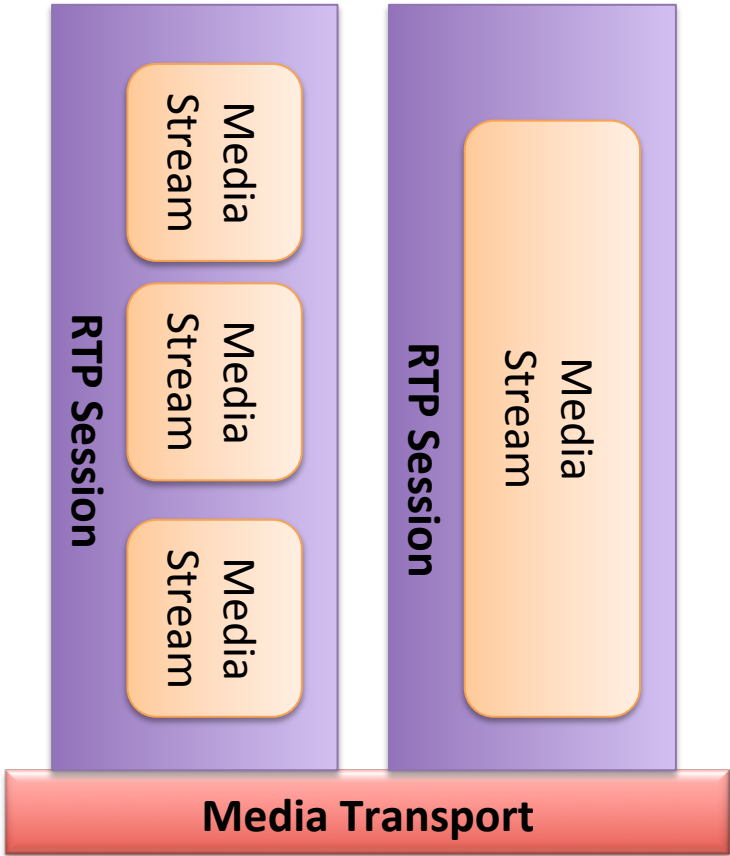RTP Session Multiplexing

RTCPeerConnection

Containment Context - 2

Media Stream
Multiplexing Context

RTP Session
Multiplexing Context

RTCPeerConnection Context

Equivalence Context

In this relationship different instances of a concept are treated to be equivalent for the purposes of relating them to the Media Source.
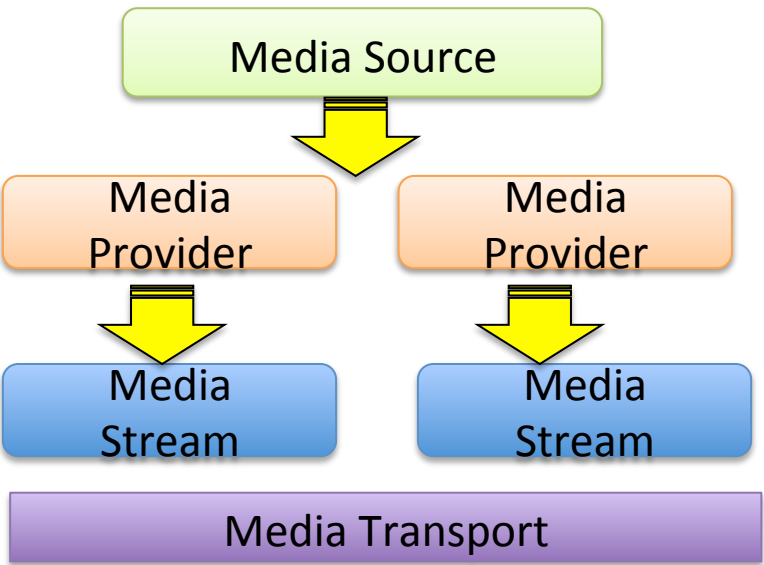
Simulcast
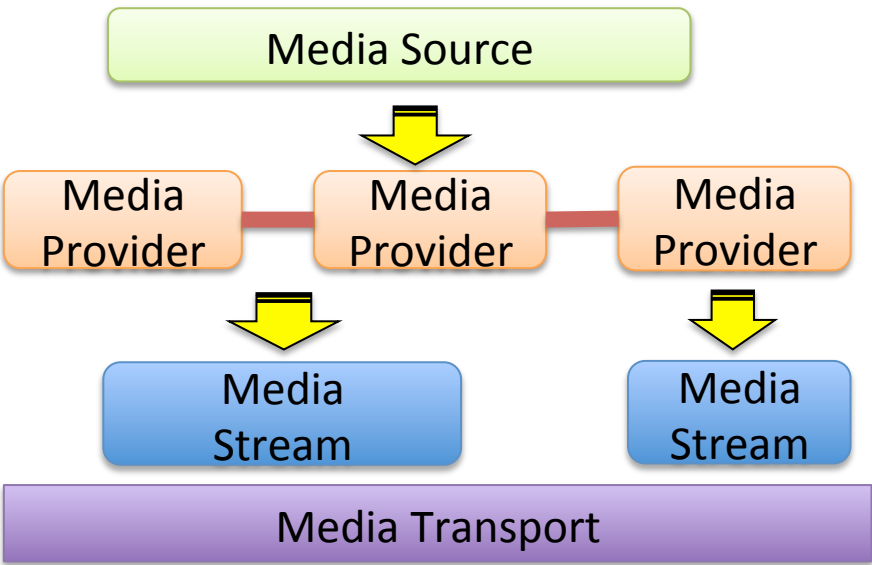
Layered Multistream Transmissions
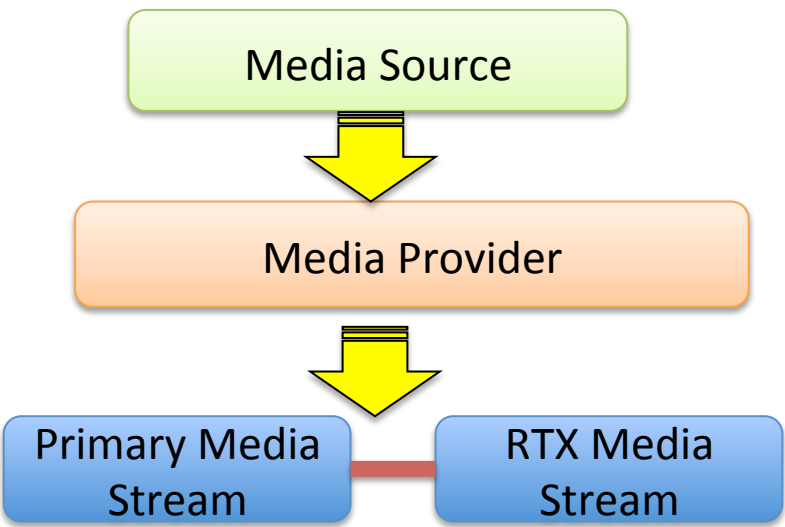
Robustness and Repair

SDP FID Semantics
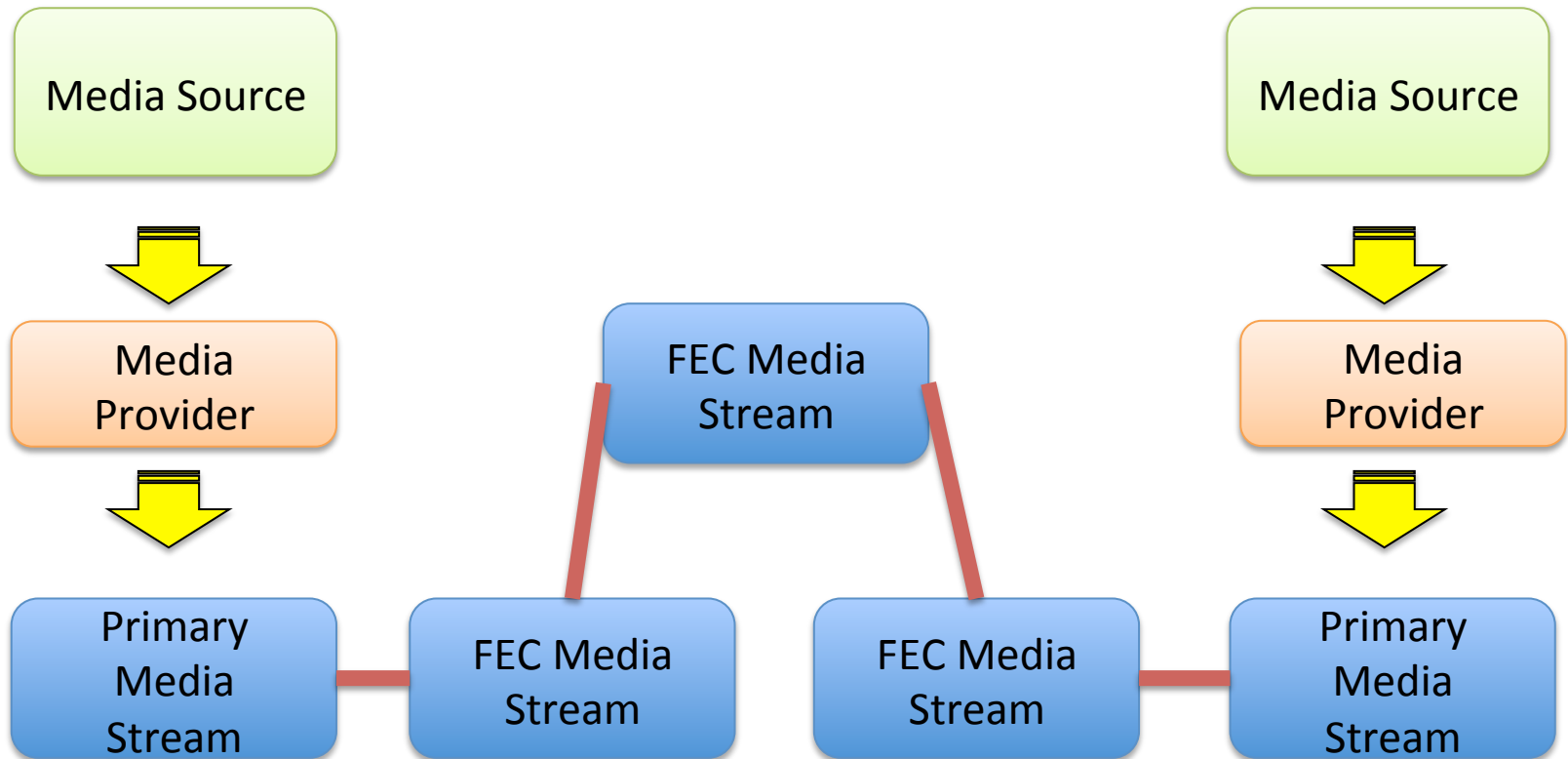
Equivalence Context - 2

Simulcast Context

Layered MST Context
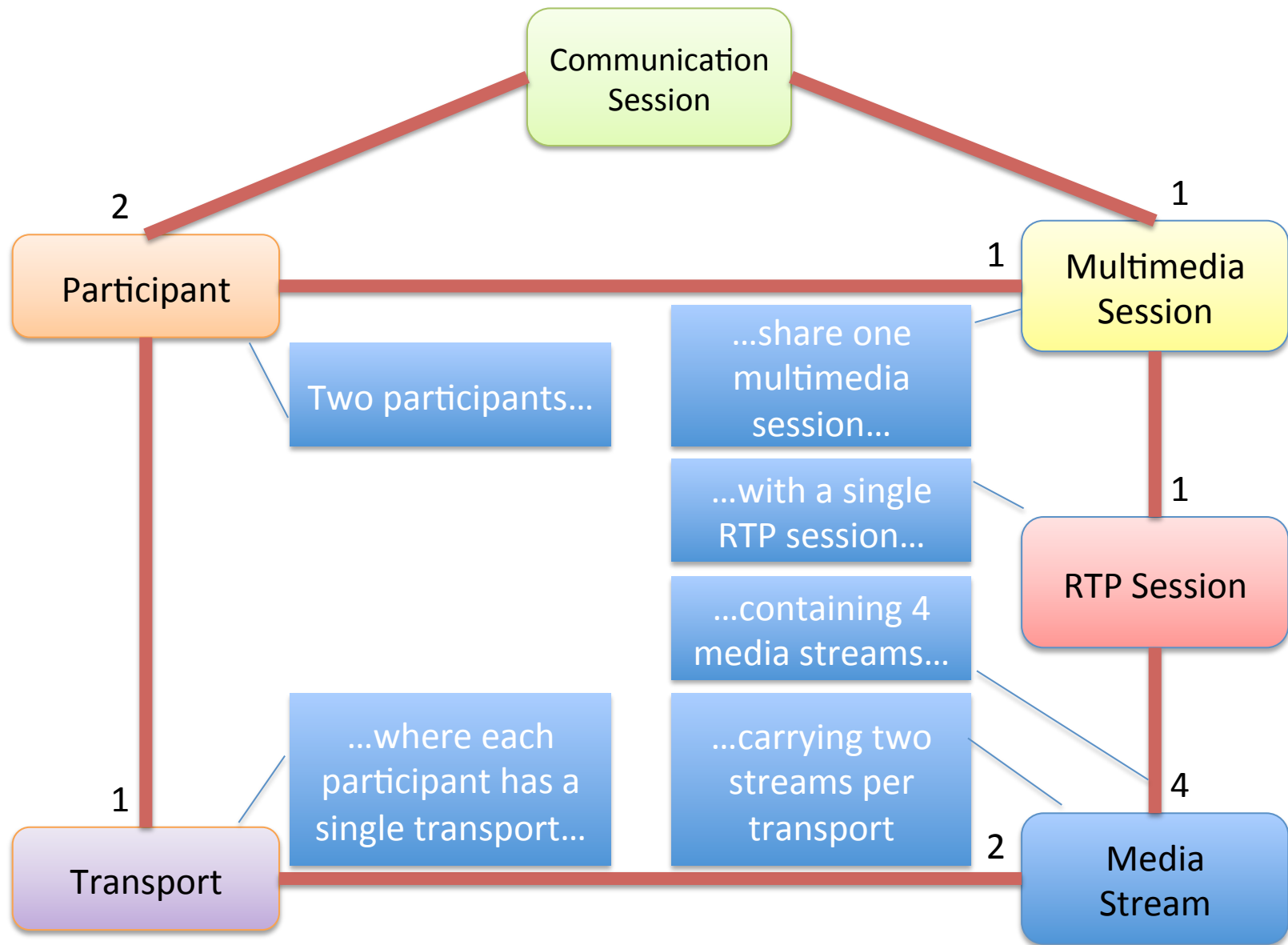
Repair Context
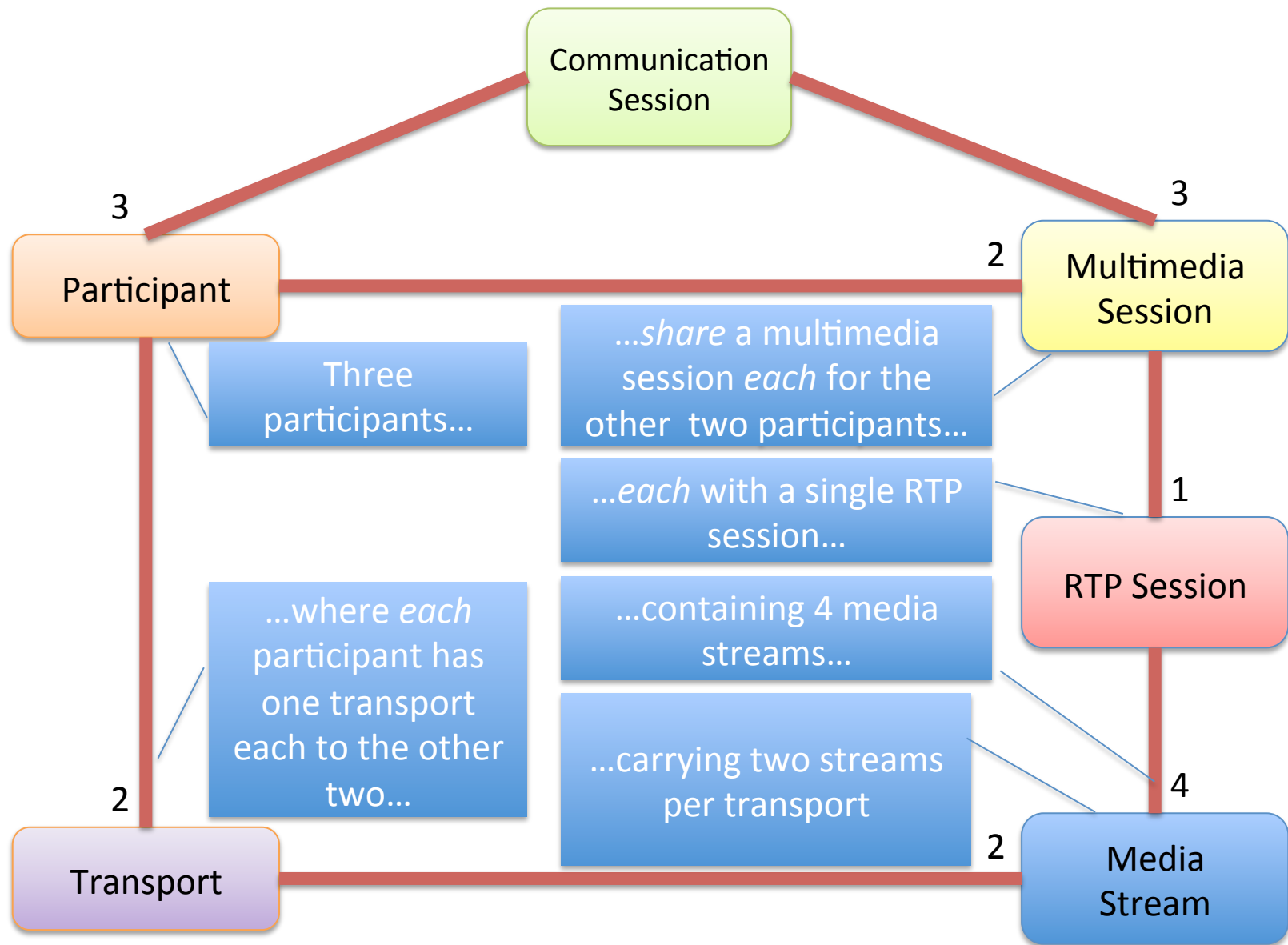
FEC Context

Session Context

There are different ways to construct a Communication Session. General relations in UML notation between Communication Session, Participants, Multimedia Sessions and RTP Sessions are outlined below for examples of:

- Point to Point Session

- Full Mesh Session

- Centralized Conference Session

Sample Point-to-Point Session

Sample Full Mesh Session

Communication Session

3 — Participant

3 — Multimedia Session

2

Three participants…

…*share* a multimedia session *each* for the other two participants…

…*each* with a single RTP session…

1 — RTP Session

…where *each* participant has one transport each to the other two…

…containing 4 media streams…

…carrying two streams per transport

2 — Transport

2

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Media Stream

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Sample Centralized Conference Session (tentative)

Communication Session

3   Participant

3   Multimedia Session

1

Three participants…

…*share* one multimedia session *each* with the conference node…

…*each* with a single RTP session…

1   RTP Session

…containing 4 media streams…

…where *each* participant has one transport to the conference node…

…carrying two streams per transport

4   Media Stream

1

2

Transport