

# 3GPP TR 23.831 V10.0.0 (2010-09)

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*Technical Specification*

**3rd Generation Partnership Project;  
Technical Specification Group Services and System Aspects;  
IP Multimedia Subsystem (IMS) Service Continuity;  
Inter-UE Transfer enhancements;  
Stage 2  
(Release 10)**



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Keywords

IMS, Service Continuity, Inter-UE Transfer

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## Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

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# 1 Scope

This technical report intends to develop enhancements to Rel-9 IMS Service Continuity in TS 23.237 [2], specifically in the functional area of Inter-UE Transfer. The main objective is to provide enhancements to mobility of media flows of a session between different UEs (Inter-UE Transfer) with respect to the following aspects:

- Extension of Inter-UE Transfer and Collaborative Session capabilities specified in Rel-09 to multiple UEs belonging to different IMS subscriptions under the same operator.
- Establishment of a Collaborative Session at session setup.
- Support for control of media components of a Collaborative Session by more than one UE simultaneously.
- Transfer of control of a Collaborative Session.
- Controller initiated media modification on a Controllee UE (e.g. video resolution).
- Discovery of ongoing IMS multimedia sessions on different UEs.
- Inter-UE Transfer initiated by the target UE when:
  - the target UE belongs to the Collaborative Session but it is not a Controller UE;
  - the target UE does not belong to the Collaborative Session and wants to join;
  - Inter-UE Transfer is performed without establishing a Collaborative Session.
- Replication of an ongoing multimedia session from one UE on another UE.
- Inter-UE Transfer between UEs connected to the IMS via an IP-CAN and ICS entities that provide interworking with UEs in the CS Domain.
- Execution of MMTEL services for Collaborative Sessions.

This document contains the results of an assessment of alternative architectures to support Inter-UE Transfer enhancements.

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# 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, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.237: "IP Multimedia Subsystem (IMS) Service Continuity; Stage 2".

[3] 3GPP TS 23.292: "IP Multimedia Subsystem (IMS) centralized services; Stage 2".

[4] 3GPP TS 22.173: "IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1".

[5] 3GPP TS 24.610: "Communication HOLD (HOLD) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".

- [6] 3GPP TS 24.605: "Conference (CONF) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".
- [7] 3GPP TS 24.629: "Explicit Communication Transfer (ECT) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".
- [8] 3GPP TS 24.647: "Advice Of Charge (AOC) using IP Multimedia (IM)Core Network (CN) subsystem; Protocol Specification".

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## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

**Collaborative Session Control:** The control operations on the Collaborative Session which can only be performed by the Controller UE, e.g. ability to release the Collaborative Session, to invoke supplementary services, and to authorize requests for IUT Media Control Related Procedures from other UEs.

**Controllee UE:** A UE that supports media flows for a Collaborative Session and may request IUT Media Control Related Procedures but is subordinate to the Controller UE for authorization of these procedures.

**Controller UE:** The UE that controls a Collaborative Session and whose service profile determines the services on the remote leg. The Controller UE may also support media flows for a Collaborative Session and may request IUT Media Control Related Procedures.

**Hosting SCC AS:** The SCC AS that manages the dialog with the remote party for a Collaborative Session.

**IUT Media Control Related Procedure:** The control operations on the media flows of the Collaborative Session which involve multiple UEs or need Controller UE's authorization within the Collaborative Session, e.g. ability to transfer/add/replicate media flows, to remove/modify media flows on a different UE.

**Playback Control:** The ability to control the playback (e.g., play/pause/rewind/fast forward/stop) of media flows of a Collaborative Session.

### 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

IUT                      Inter-UE Transfer

---

## 4 Scenarios and Operations

### 4.1 Scenarios for Collaborative Session

The following is the list of scenarios that describe the new and enhanced IUT capabilities for Collaborative Sessions:

1. Establishment of Collaborative Session at IMS session origination.
2. Establishment of Collaborative Session on IMS session termination.
3. Transferring media.
4. IUT initiated by the target UE.
5. Adding media.
6. Deleting media.



7. Modifying media.
8. Replicating media.
9. Transferring Collaborative Session control.

Several of the scenarios in the following clauses are for operations involving UEs belonging to multiple subscriptions. For these cases the following figure shows a general representation of some of the IMS network elements involved in these scenarios.

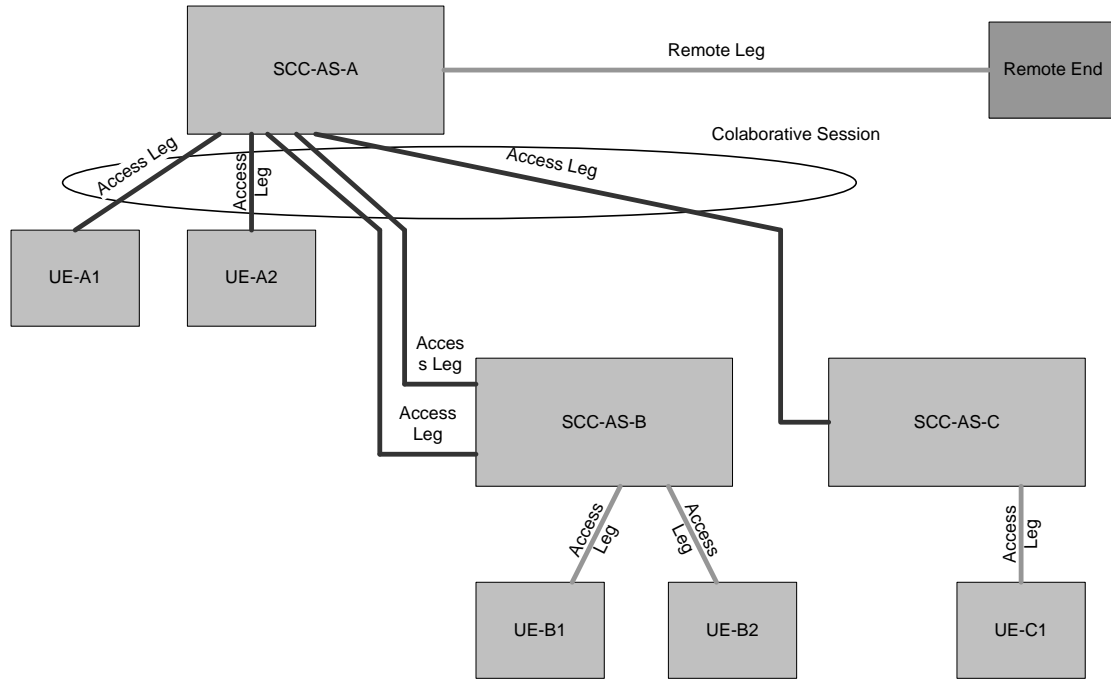
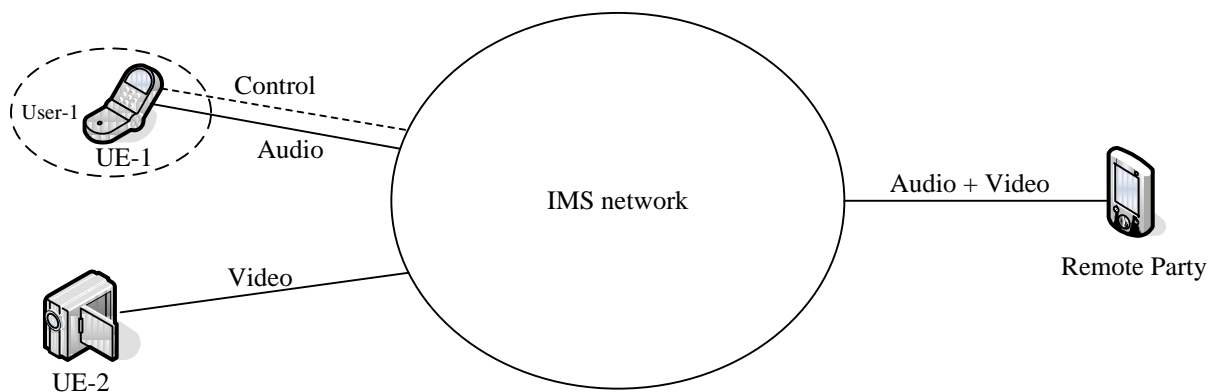


Figure 4.1-1

### 4.1.1 Establishment of Collaborative Session at IMS session origination

This scenario enables the IMS IUT user to establish a Collaborative Session without the pre-requisite of having an IMS session already established. The different UEs to be involved in the Collaborative Session may belong to the same IMS subscription or to different IMS subscriptions.

In the example of Collaborative Session origination shown in Figure 4.1.1-1, a user at UE-1 wants to set up a Collaborative Session with audio media flow in UE-1 and video media flow in UE-2, and wants to control the Collaborative Session through UE-1. Firstly, UE-1 requests the IMS network to set up with the remote party an audio media flow at UE-1 and video media flow at UE-2, and in addition to create a Collaborative Session controlled by UE-1. Subsequently, the IMS network sets up the session with the remote party for establishment of the audio and video media flows, thus creating a Collaborative Session between UE-1 and UE-2 with UE-1 as the Controller UE. After the successful setup of the Collaborative Session, there is audio media flow between UE-1 and remote party, video media flow between UE-2 and remote party, and UE-1 controls the Collaborative Session.

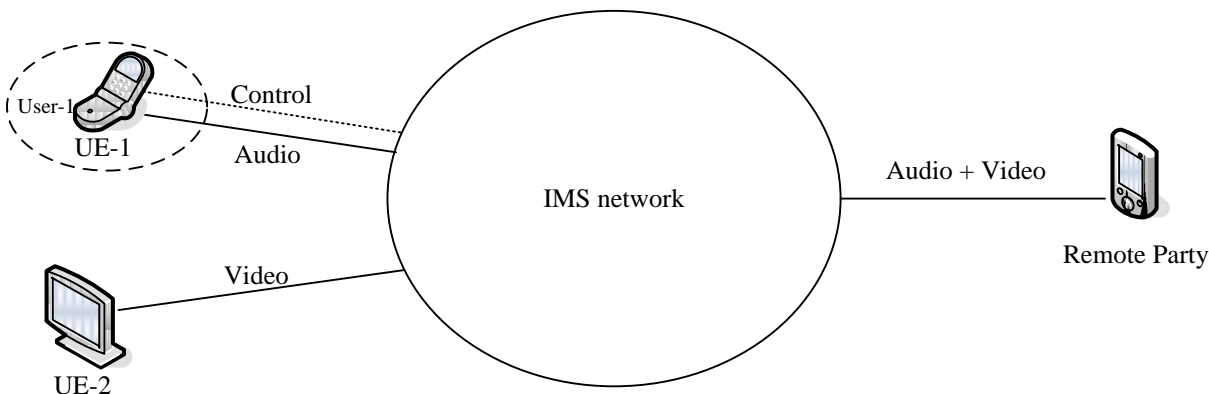


**Figure 4.1.1-1: Establishment of Collaborative Session at IMS session origination**

## 4.1.2 Establishment of Collaborative Session at IMS session termination

This scenario enables the IMS IUT user to establish a Collaborative Session when accepting a terminating IMS session. The different UEs to be involved in the Collaborative Session may belong to the same IMS subscription or to different IMS subscriptions.

In the example of Collaborative Session termination shown in Figure 4.1.2-1, a remote party sets up a session with audio and video media flows to UE-1. The user at UE-1 accepts incoming session as a Collaborative Session with audio media flow in UE-1, video media flow in UE-2, and control of the Collaborative Session in UE-1. After the successful setup of the Collaborative Session, there is audio media flow between UE-1 and remote party, video media flow between UE-2 and remote party, and UE-1 controls the Collaborative Session.



**Figure 4.1.2-1: Establishment of Collaborative Session at IMS session termination**

## 4.1.3 Transferring media

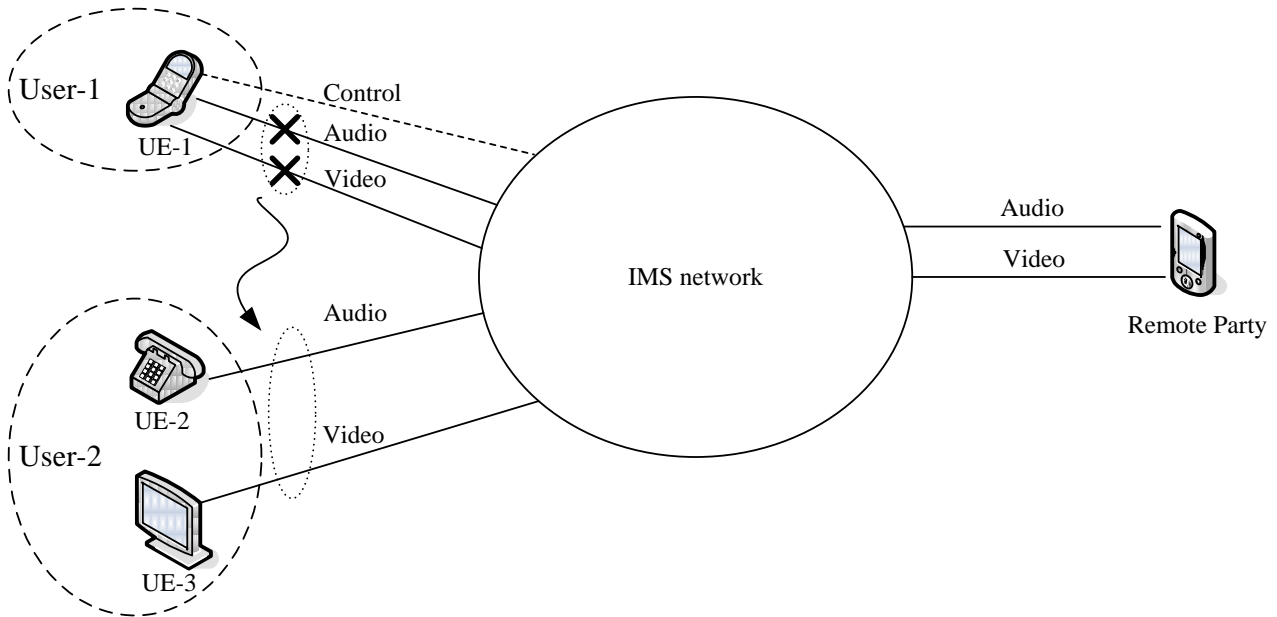
### 4.1.3.1 Transferring media to UE of same IMS subscription

Refer to TS 23.237 [2].

### 4.1.3.2 Transferring media to UE of different IMS subscription

This scenario enables the IMS IUT user to establish a Collaborative Session and to transfer one or more media flows of an ongoing multimedia session between different UEs belonging to different IMS subscriptions whilst keeping Collaborative Session control.

In the example shown in Figure 4.1.3-1, user-1 has a multimedia session with audio and video media flows between his device UE-1 and remote party, and UE-2 and UE-3 belong to user-2's subscription. Subsequently, user-1 transfers the audio media flow from device UE-1 to device UE-2 and the video media flow from device UE-1 to device UE-3, thus establishing a Collaborative Session between the three UEs with control of Collaborative Session at UE-1, which triggered the multimedia session transfer. After the transfer is completed, only the control of the Collaborative Session remains with the device UE-1, which is the Controller UE whereas UE-2 and UE-3 are Controllee UEs.



**Figure 4.1.3-1: Transferring media between UE belonging to different IMS subscriptions**

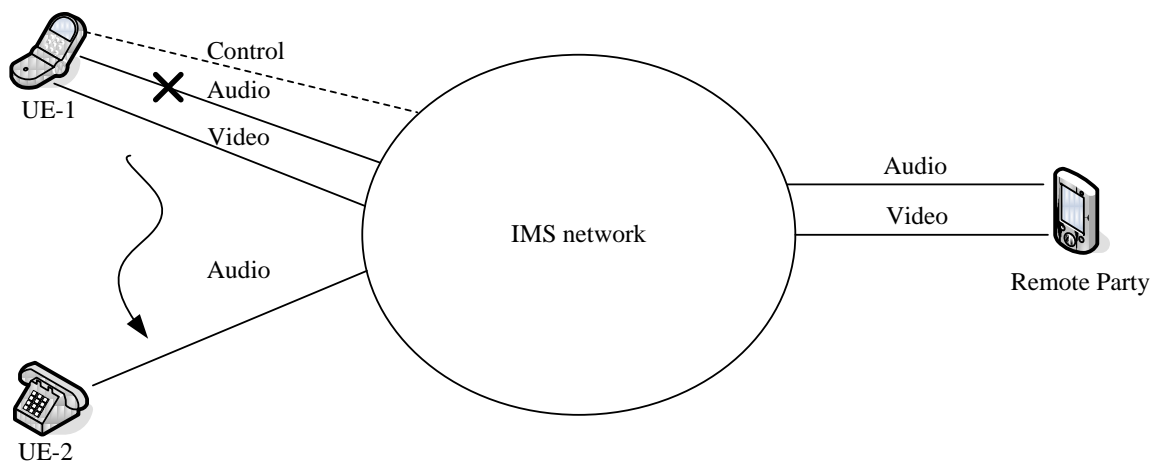
Continuing on the previous example, the user-1 from his device UE-1 can transfer the voice and video media flows of the Collaborative Session back to UE-1, thus ending the Collaborative Session between UEs.

#### 4.1.4 IUT initiated by the target UE

This scenario enables the IMS IUT user to request the transfer of one or more media flows of an ongoing multimedia session and/or control of an ongoing Collaborative Session, by interacting with the target UE, belonging to the same IMS subscription or to a different IMS subscription.

There is one ongoing session with audio and video media flows between UE-1 and remote party. UE-2 requests the transfer of an audio media flow from UE-1 to UE-2 whilst keeping video media flow and Collaborative Session control in UE-1. After the media transfer is completed, the audio media flow is in UE-2, and the video media flow and Collaborative Session control remain with the device UE-1. UE-1 and UE-2 are then involved in a Collaborative Session, for which UE-1 is the Controller UE and UE-2 is Controllee UE.

As a variation from this example, other kind of supported Inter-UE Transfers may be requested by the user by interacting with the target UE, e.g. transfer of media with Collaborative Session control, Inter-UE Transfer without establishing a Collaborative Session.



**Figure 4.1.4-1: Pulling media**

## 4.1.5 Adding media

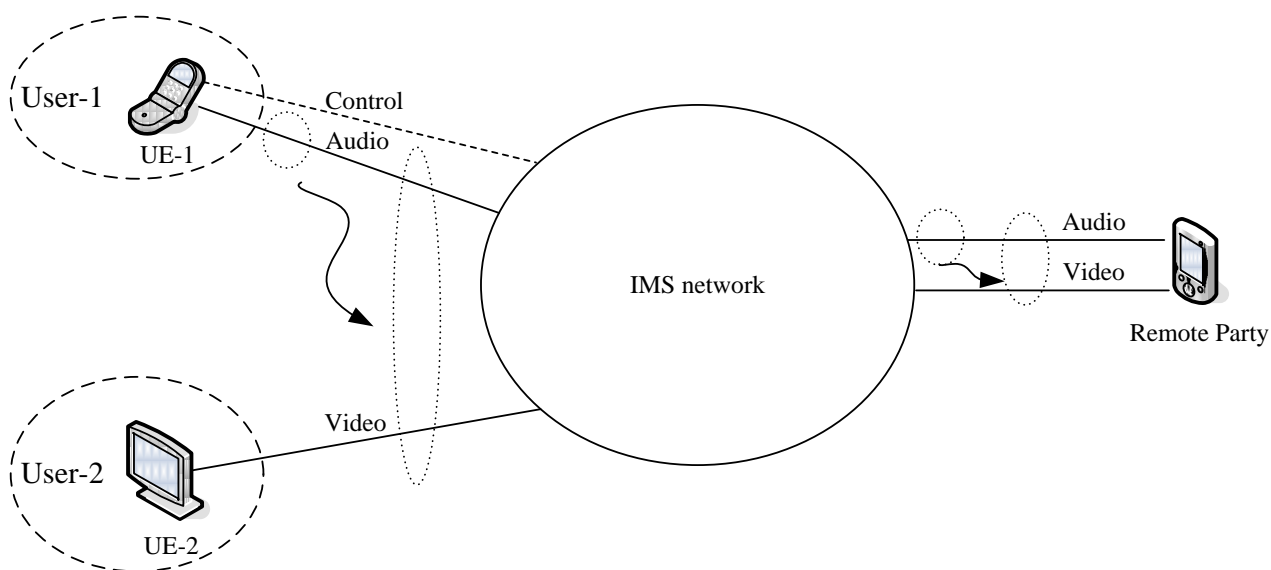
### 4.1.5.1 Adding media to UE of same IMS subscription

Refer to TS 23.237 [2].

### 4.1.5.2 Adding media to UE of different IMS subscription

This scenario enables the IMS IUT user to establish a Collaborative Session and to add one or more media flows of an ongoing multimedia session to different UEs belonging to different IMS subscriptions whilst keeping Collaborative Session control.

In the example shown in Figure 4.1.5-1, user-1 has a multimedia session with audio media flow between his device UE-1 and remote party, and UE-2 belongs to user-2's subscription. Subsequently, user-1 adds a video media flow to UE-2 with remote party. After the adding is completed, the Collaborative Session control and audio media flow remain with the device UE-1, video media flow of the Collaborative Session is in UE-2. UE-1 and UE-2 are then involved in a Collaborative Session, for which UE-1 is the Controller UE whereas UE-2 is Controllee UE.



**Figure 4.1.5-1: Adding media to UE belonging to different IMS subscriptions**

## 4.1.6 Deleting media

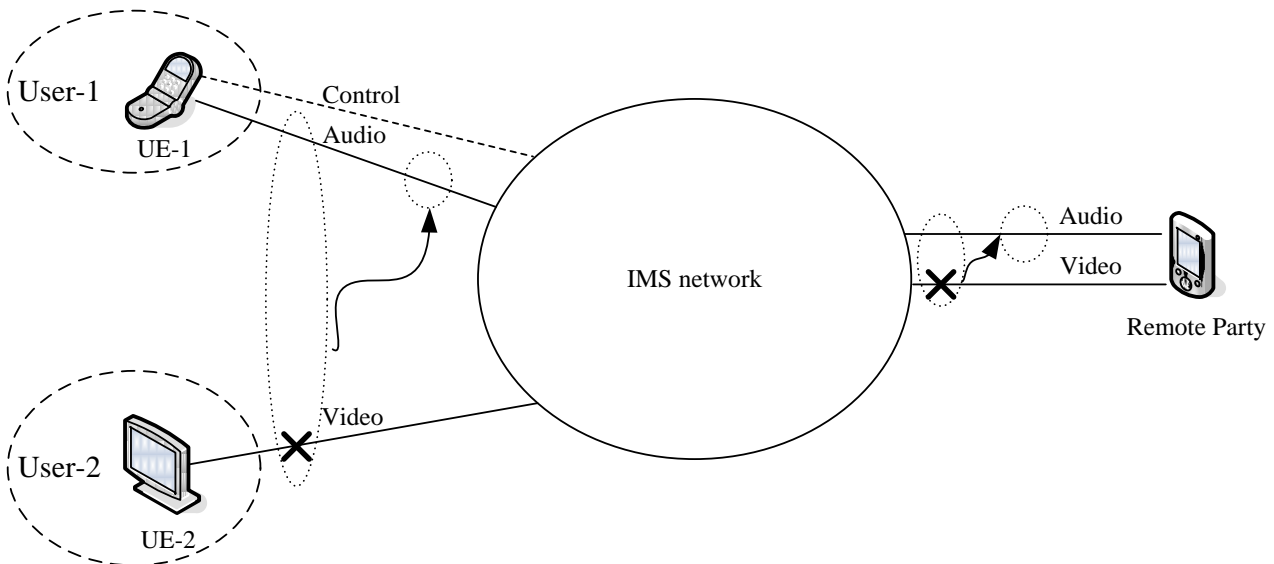
### 4.1.6.1 Deleting media from UE of same IMS subscription

Refer to TS 23.237 [2].

### 4.1.6.2 Deleting media from UE of different IMS subscription

This scenario enables the IMS IUT user to delete one or more media flows of an ongoing Collaborative Session from UEs belonging to different IMS subscriptions.

In the example shown in Figure 4.1.6-1, user-1 has a Collaborative Session with audio media flow between his device UE-1 and remote party, video media flow between UE-2 and remote part, and UE-2 belongs to user-2's subscription. Subsequently, the user-1 deletes video media flow from UE-2. In this scenario, after the deleting is completed, there is no longer a Collaborative Session, however if other UEs other than UE-1 are part of the original Collaborative Session, the Collaborative Session remains.

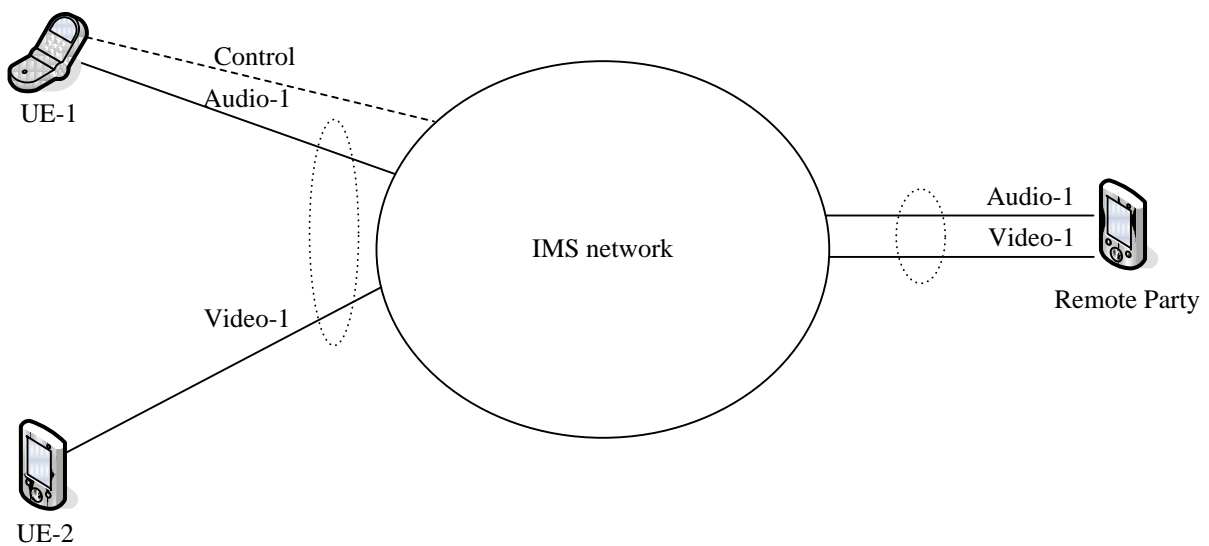


**Figure 4.1.6-1: Deleting media from UE belonging to different IMS subscription**

### 4.1.7 Modifying media

This scenario enables the IMS IUT user to modify the media flow of an ongoing Collaborative Session.

In the example shown in Figure 4.1.7-1, there is a Collaborative Session with audio-1 and video-1 media flows between UE-1/UE-2 and remote party for which UE-1 is the Controller UE whereas UE-2 is Controllee UE. UE-1 and UE-2 may belong to the same IMS subscription or different IMS subscriptions.



**Figure 4.1.7-1: Collaborative Session between UE-1/UE-2 and remote party**

UE-1 and UE-2 can re-negotiate media information with remote party to modify media flow(s) in themselves. UE-1 can initiate re-negotiation of media information of UE-2 with remote party.

### 4.1.8 Replication controlled by IMS Network

This scenario enables the IMS IUT user to replicate the media flow of an ongoing multimedia session to different UEs, and to establish one Collaborative Session.

In the example shown in Figure 4.1.8-1, a user has a multimedia session with audio-1 and video-1 media flows between his device UE-1 and remote party. Subsequently, the user requests to replicate the video-1 media flow as video-2 media flow to UE-2, and establishes one Collaborative Session for it. After the success of replication, the Collaborative Session control is in UE-1, audio-1 and video-1 media flows remain with UE-1, and IMS network replicates video-1 to

video-2 in UE-2. Video-1 and video-2 media flows are transferring same downlink video packets from remote party, and only uplink video packets from UE-1 will be transferred to remote party. UE-1 and UE-2 may belong to the same IMS subscription or different IMS subscriptions.

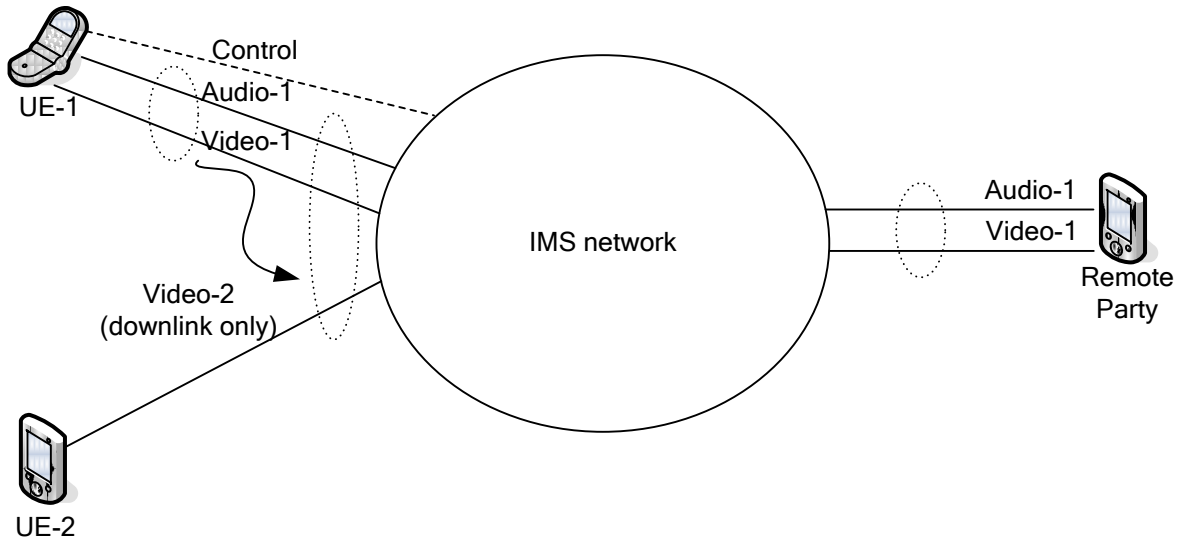


Figure 4.1.8-1: Collaborative Session Replicate media

For the above example, either UE-1 or UE-2 could request to replicate video-1 from UE-1 to itself. Only the downlink media of Video-1 will be replicated to UE-2.

The limitation of replicating downlink data only of the media flow which is required to be replicated applies to all types of media flows in this release.

### 4.1.9 Transferring Collaborative Session control

In this scenario, UE-1 and UE-2 are in a Collaborative Session, with UE-1 being the controller UE (i.e. has control of the Collaborative Session) with video media flow, and UE-2 being the controllee UE with voice media flow. Subsequently UE-1 decides to transfer the Collaborative Session control to UE-2. In this process, UE-2 becomes the controller UE (i.e. has control of the Collaborative Session) while UE-1 becomes the controllee UE with video media flow. UE-1 and UE-2 may belong to the same IMS subscription or different IMS subscriptions.

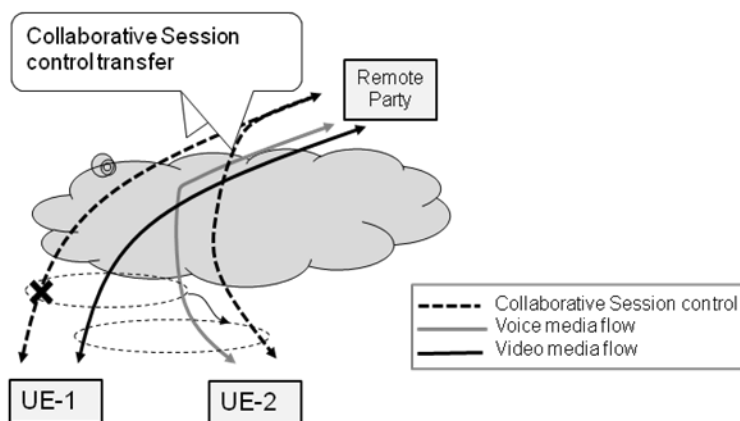


Figure 4.1-1: An example of Collaborative Session control transfer

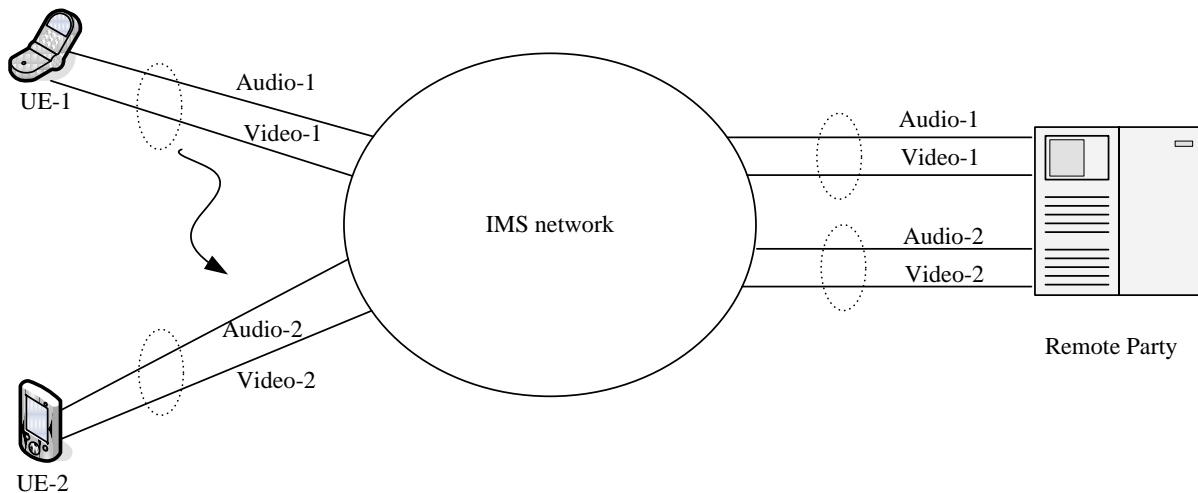
## 4.2 Void

## 4.3 Scenarios without establishing a Collaborative Session

### 4.3.1 Replicating media by remote end

This scenario enables the IMS IUT user to replicate all media flows of an ongoing multimedia session to a different UE, which results in establishing an IMS session which is independent from the original one. The original multimedia session is not impacted by the replication procedure.

In the example shown in Figure 4.3.1-1, a user has a multimedia session consisting of media flows Audio-1 and Video-1 between his device UE-1 and a remote party, which is likely to be a media flow server in this scenario, e.g. an IPTV server. Subsequently, the user requests to replicate current media flows to UE-2. After the success of the replication, a multimedia session with media flows Audio-2 and Video-2 is established between UE-2 and the remote party. The original multimedia session between UE-1 and remote party is not impacted, in other word, audio-1 and video-1 media flows remain on UE-1. These two sessions are handled independently by the IMS network but may have the same service characteristics and may be correlated by the remote party. UE-1 and UE-2 may belong to the same IMS subscription or different IMS subscriptions.



**Figure 4.3.1-1: Replicating media by remote end**

For the above example, either UE-1 or UE-2 could request to replicate the session to UE-2.

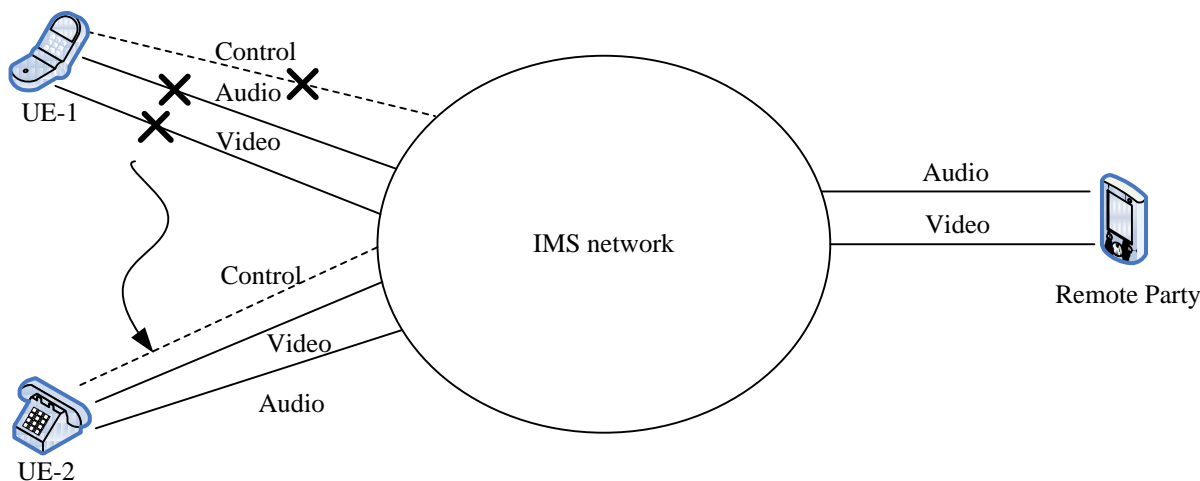
### 4.3.2 Transfer of entire session

This scenario allows the IMS IUT user to transfer an entire session from an IUT capable UE to another UE. The IUT does not result in a Collaborative Session.

In the example shown in Figure 4.3.2-1 a user has a multimedia session with audio-1 and video-1 media flows between their device UE-1 and remote party. Subsequently, the user requests to the entire multimedia session to UE-2. Establishment of a Collaborative Session is not required for this scenario. After the success of transfer, the session control, and media components audio-1 and video-1 are transferred to UE2 and UE1 is released from the session with the remote party. UE2 is not required to be an IUT capable UE. This scenario may be initiated by UE-1 or alternatively by UE-2. If the IUT is initiated by UE-2, then UE-2 is required to be IUT capable. UE-1 and UE-2 may belong to the same IMS subscription or different IMS subscriptions. The scenario where UE-1 and UE-2 belong to the same IMS subscription is addressed in TS 23.237 [2].

**NOTE:** Transfer of a session using IUT without establishing a Collaborative Session has a similar result to using ECT to transfer a session. Differences between the two services and their execution of transfer procedures exist.

**Editor's Note:** When IUT occurs between UEs that belong to different subscriptions, resolving which subscriber's services are active in the signalling path towards the remote leg after IUT without establishing a Collaborative Session has occurred is FFS.



**Figure 4.3.2-1: IUT of an entire multimedia session without establishing a Collaborative Session**

## 4.4 Controller UE and Controllee UE operations

In one Collaborative Session, the roles of the Controller UE and the Controllee UE are as follows:

- Only one Controller UE has the Collaborative Session Control. The Controller UE can also perform IUT Media Control Related Procedures. The Controller UE is associated with the Hosting SCC AS and is the local endpoint known to the remote party (as in Release 9).
- The Controllee UE with IUT capabilities is allowed to perform IUT Media Control Related Procedures. And when the Controllee UE with IUT capabilities initiates IUT Media Control Related Procedures, it is subject to the authorization of the Controller UE or the Hosting SCC AS on behalf of the Controller UE (e.g. based on the user preferences associated with the Controller UE).

Table 4.4-1 provides an overview of Controller UE and Controllee UE operations. The operations of the Controllee UE without IUT capabilities are the same as those of the Controllee UE in Release 9, and therefore not shown in Table 4.4-1.



Table 4.4-1: Controller UE and Controllee UE operations

Operations		Controller UE	Controller UE Comment	Controllee UE with IUT Capabilities	Controllee UE with IUT Capabilities Comment
Add media flow (local end initiating case)	Add media flow by creating a new Access Leg on the same UE	Yes	Standard SC procedures.	Yes	Standard SC procedures.
	Add media flow by creating a new Access Leg on a different UE	Yes	Rel-9 capability of IUT.	Yes	Rel-10 New capability of IUT.
	Add media flow to an existing Access Leg on the same UE	Yes	Standard IMS procedures.	Yes	Standard IMS procedures.
	Add media flow to an existing Access Leg on a different UE	Yes	Rel-9 capability of IUT.	Yes	Rel-10 New capability of IUT.
Remove media flow (local end initiating case)	Remove media flow from an Access Leg on the same UE	Yes	Standard IMS procedures.	Yes	Standard IMS procedures.
	Remove media flow from an Access Leg on a different UE	Yes	Rel-9 capability of IUT.	Yes	Rel-10 New capability of IUT.
Invoke Supp Services	MMTEL service control with media on the same UE (TS 22.173 [4])	Yes	Standard IMS procedures.	Yes	Rel-10 New capability of IUT.
	MMTEL service control with media on a different UE (TS 22.173 [4])	Yes	Rel-9 capability of IUT.	No	
Collaborative Session Release		Yes	Rel-9 capability of IUT.	No	

Operations		Controller UE	Controller UE Comment	Controllee UE with IUT Capabilities	Controllee UE with IUT Capabilities Comment
Renegotiate media characteristics (local end initiating side)	Update of media characteristics on the same UE	Yes	Standard IMS procedures.	Yes	Standard IMS procedures.
	Update of media characteristics on a different UE	Yes	Rel-10 New capability of IUT.	Yes	Rel-10 New capability of IUT.
Transfer of media flow	Transfer media flow from the same UE to a different UE	Yes	Rel-9 capability of IUT.	Yes	Rel-10 New capability of IUT.
	Transfer media flow from a different UE to another different UE	Yes	Rel-9 capability of IUT.	Yes	Rel-10 New capability of IUT.
	Transfer media flow from a different UE to the same UE	Yes	Rel-9 capability of IUT.	Yes	Rel-10 New capability of IUT.
Transfer of Collaborative Session control	Transfer Collaborative Session control from the same UE to a different UE	Yes	Rel-10 New capability of IUT. Only transfer to a different UE of the same service profile and same subscription is supported.	No	
	Transfer Collaborative Session control from a different UE to the same UE	No		Yes	Rel-10 New capability of IUT. Only transfer from a different UE of the same service profile and same subscription is supported.
Replication of media flow	Replicate media flow from the same UE to a different UE	Yes	Rel-10 New capability of IUT.	Yes	Rel-10 New capability of IUT.
	Replicate media flow from a different UE to another different UE	Yes	Rel-10 New capability of IUT.	Yes	Rel-10 New capability of IUT.
	Replicate media flow from a different UE to the same UE	Yes	Rel-10 New capability of IUT.	Yes	Rel-10 New capability of IUT.

## 5 Architectural Requirements and Assumptions

### 5.1 Assumptions

- The UEs involved in IUT Media Control Related Procedures can belong to different IMS subscriptions under the same operator.
- The Collaborative Session control can be transferred between UEs registering Public User identities that share the same service profile (and thus belong to the same IMS subscription).

### 5.2 Architectural Requirements

The solution shall fulfil the following architectural requirements:

- The Controller UE shall maintain the Collaborative Session Control for the session until the session is released or until the Collaborative Session Control is transferred to another Controller capable UE.
- It shall be possible to apply IUT Media Control Related Procedures between UEs belonging to different IMS subscriptions.

- When UEs from different subscriptions are involved in a Collaborative Session, the SCC ASs shall assure that UEs do not create subsequent Collaborative Sessions for media belonging to Access Legs of the original Collaborative Session, and thus only a single Collaborative Session with a single hosting SCC AS shall be allowed.
- When an SCC AS creates an access leg towards a UE that is not part of the same subscription that is currently associated with the Collaborative Session, it shall include sufficient information indicating that there already exists a hosting SCC AS.
- It shall be possible for a UE to indicate that it is capable to become a Controller UE.
- It shall be possible for the Controller UE to apply IUT Media Control Related Procedures when setting up either an originating or terminating session.
- It shall be possible, based on the terminating user's preferences, to route incoming IMS session requests to a UE that is capable of becoming a Controller UE.
- It shall be possible for a UE to request to replicate one or more media flow(s) from the Remote End.
- It shall be possible for the network to replicate media in order to support the media replication scenarios described in this document.
- It shall be possible for a UE to determine the information of ongoing multimedia session(s) in other UEs before or during IUT Media Control Related Procedures.
- It shall be possible for the network to mask some or all of the media flows composing the session from session discovery based on user service configuration or operator policy.
- The selection of the media flows to be transferred may be based on the ongoing multimedia session(s) on the source UE(s) discovered by the target UE(s) in pull mode.
- It shall be possible for a UE to request and, when authorized, to pull one or more media flow(s) from a source UE.
- It shall be possible for a Controller UE to initiate transfer of Collaborative Session Control to another Controller capable UE that has registered a Public User identity and shares the service profile with the Public User identity used in the Collaborative Session.
- It shall be possible for a Controller capable UE to request and, when authorized, to pull Collaborative Session Control from a source UE.
- It shall be possible for the Controller UE to authorize requests for IUT Media Control Related Procedures.
- It shall be possible for the network to authorize requests for IUT Media Control Related Procedures on behalf of the Controller UE.
- It shall be possible to perform Inter-UE Transfer between UEs connected to the IMS via an IP-CAN and ICS entities that provide interworking with UEs in the CS Domain without impact on the CS domain.
- The network shall resolve conflicting IUT Media Control Related Procedures within a Collaborative Session.
- When the Collaborative Session Control on the Controller UE is lost, the SCC AS may transfer the Collaborative Session Control to another Controller capable UE (with a Public User Identity belonging to the same Service Profile) involved in the Collaborative Session based on the user preferences associated with the Controller UE.
- It shall be possible for the SCC AS to initiate Inter-UE Transfer on behalf of the UE/user as a result of a UE requesting IUT, or due to other stimulus such as, but not restricted to, IMS signalling received by the SCC AS from other IMS entities, user preferences, or other service layer triggers.

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## 6 Architecture Alternatives

### 6.1 Alternative 1

#### 6.1.1 Architecture Reference Model

##### 6.1.1.1 General

This architecture alternative builds on the functionalities of the SCC AS specified in TS 23.237 [2] to enable the enhanced IUT functionalities in Rel-10.

Any IUT capable UE can request IUT Media Control Related Procedures. Such requests are subject to authorization by the SCC AS and/or the Controller UE. Authorization is based on user and/or operator provided application specific settings in the SCC AS and/or in the Controller UE. These application specific settings may be associated with the service profile of the Controller UE in service specific data in the HSS.

Although any IUT capable UE can request IUT Media Control Related Procedures, there is only one Controller UE at a time in a Collaborative Session. The UE that establishes the Collaborative Session and whose service profile is in effect for the session with the remote end is the initial Controller UE. The Controller UE role may be transferred to a different Controller capable UE by using the Controller UE transfer procedure as specified in clause 6.1.3.4.

**NOTE:** Only transfer of Collaborative Session Control to another Controller capable UE that has registered a Public User Identity that shares the same service profile (and thus belongs to the same IMS subscription) is supported for this release.

##### 6.1.1.2 User authorisation and preferences

There are two different kinds of authorization in the IUT architecture:

**Authorization by the SCC AS. The SCC AS responsibilities includes:**

- checking that the subscription allows the requested operation.
- enforcing network based user preferences, e.g. check whether other UEs shall be allowed to retrieve session information related to the UE.

**Authorization of incoming request by the UE. The UE based authorization includes:**

- authorization through end-user interaction, e.g. the end user authorizes requests for IUT Media Control Related Procedures by pressing a button on the device.
- automatic authorization by UE configuration, e.g. the UE automatically authorizes requests for IUT Media Control Related Procedures from a specific device.

The UE based authorization is considered to be a local implementation of the UE.

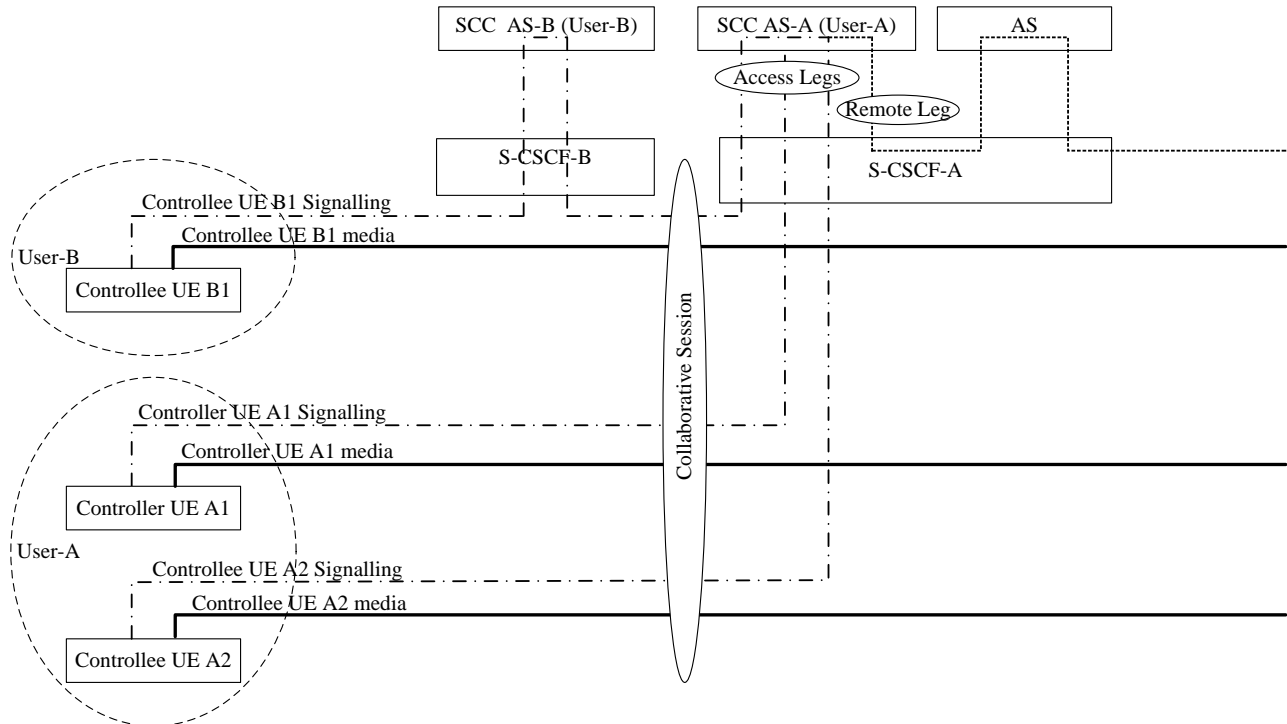
If the user requires configuring IUT authorisation and preference settings to the SCC AS, this shall be possible via the Ut interface. The information that can be configured includes:

- UEs authorised by the user to perform the IUT Media Control Related Procedures; and
- authorisation for the SCC AS to preferentially route incoming session invitations from the remote party towards Controller capable UE(s). The user may additionally define criteria to determine whether to preferentially route incoming session invitations from the remote party towards Controller capable UE(s). It shall be possible to apply, for example, the following criteria and combinations of the following criteria to the incoming request:
  - Calling party identity (Public User Identity);
  - Called party identity used;
  - Identification of the Service (Service Identifier); and
  - Media types being offered in the incoming request.

The SCC AS shall take in account operator policy and the above user preferences when determining:

- whether the UE is authorised to perform the Controller UE functions, and
- whether to preferentially route incoming session requests from a remote party towards Controller capable UE(s).

## 6.1.2 Control and User Plane Paths



**Figure 6.1.2-1: Control and User Plane Paths for Collaborative Session between UEs belonging to different IMS subscriptions**

Figure 6.1.2-1 illustrates control and user plane paths for a two-user scenario in which there is a single Controller UE (UE A1 belonging to User-A). The Hosting SCC AS is the SCC AS that serves the (initial) Controller UE (SCC AS-A, that serves User-A in this illustration). It anchors the Remote Leg of the Collaborative Session (see TS 23.237 [2] for Remote Leg) and thereby executes service requests towards the remote end during and after setup of the Collaborative Session. Any other SCC AS involved in the Collaborative Session (in this illustration, SCC AS-B, that serves User-B) simply relays service requests associated with the Collaborative Session towards SCC AS-A (with SCC AS-A acting as remote end for that leg) using standard IMS signalling. Each SCC AS involved in the Collaborative Session may execute Access Transfer of the UE that it serves or forward the Access Transfer request to SCC AS-A.

In order for SCC AS-B to determine that it shall simply relay service requests associated with the Collaborative Session towards the Hosting SCC AS-A rather than execute them, handling is applied as follows:

- if an SCC AS acts as a Hosting SCC AS for a Collaborative Session, it shall include a piece of service interaction information in the SIP signalling messages sent to other SCC-ASs, indicating that the Service Feature "Collaborative Session" has been performed;
- if an SCC AS receives a SIP message containing indication that the Service Feature "Collaborative Session" has been performed, it shall relay all service requests associated with the Collaborative Session towards the SCC AS that has inserted this indication.

## 6.1.3 Information Flows

### 6.1.3.1 General

The information flows in this clause that illustrate multiple IMS subscription scenarios mention network-based authorization of Collaborative Session service requests. In each such flow, it is understood that, in order to perform

network-based authorization of such requests, the SCC AS can use collaborator-oriented information as described in clause 6.1.4.

In the following information flows, when initiating IUT Media Control Related Procedures, the Controller UE can be replaced by the Controllee UE with IUT capabilities, with the difference that the Hosting SCC AS receiving a media control request from a Controllee UE with IUT capabilities shall send it to the Controller UE for authorization, or authorize it on behalf of the Controller UE (e.g. based on the user preferences associated with the Controller UE).

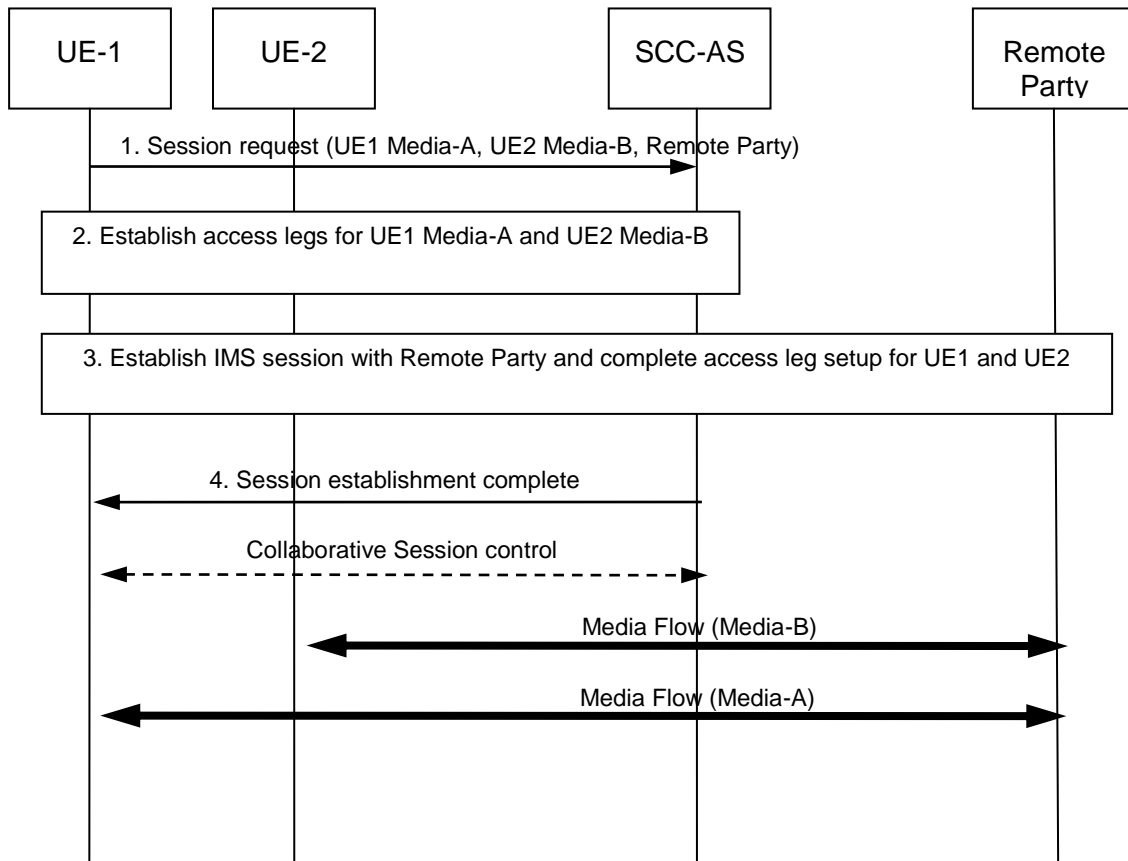
The scenarios and information flows in this document exemplify IUT initiated by a UE sending an IUT request received by the SCC AS. Scenarios pertaining to the SCC AS initiating IUT based on a different stimulus such as user preferences, other IMS signalling or service layer triggers are not precluded, but illustrative information flows are not included in this document.

### 6.1.3.2 Establishment of Collaborative Session upon Originating IMS Session Setup

#### 6.1.3.2.1 Controller UE and Controllee UE belong to same IMS subscription

##### 6.1.3.2.1.1 Alternative 1

UE-1 establishes an IMS session with a remote party and establishes a Collaborative Session with UE2 belonging the same IMS subscription as part of a single procedure. The Collaborative Session is anchored at the SCC AS. UE-1 may establish the Collaborative Session with one or more media being established on the Controllee UE and with zero or more media on the Controller (itself). Following is an information flow for this procedure.



**Figure 6.1.3.2.1.1-1: Establish Collaborative Session on IMS session origination**

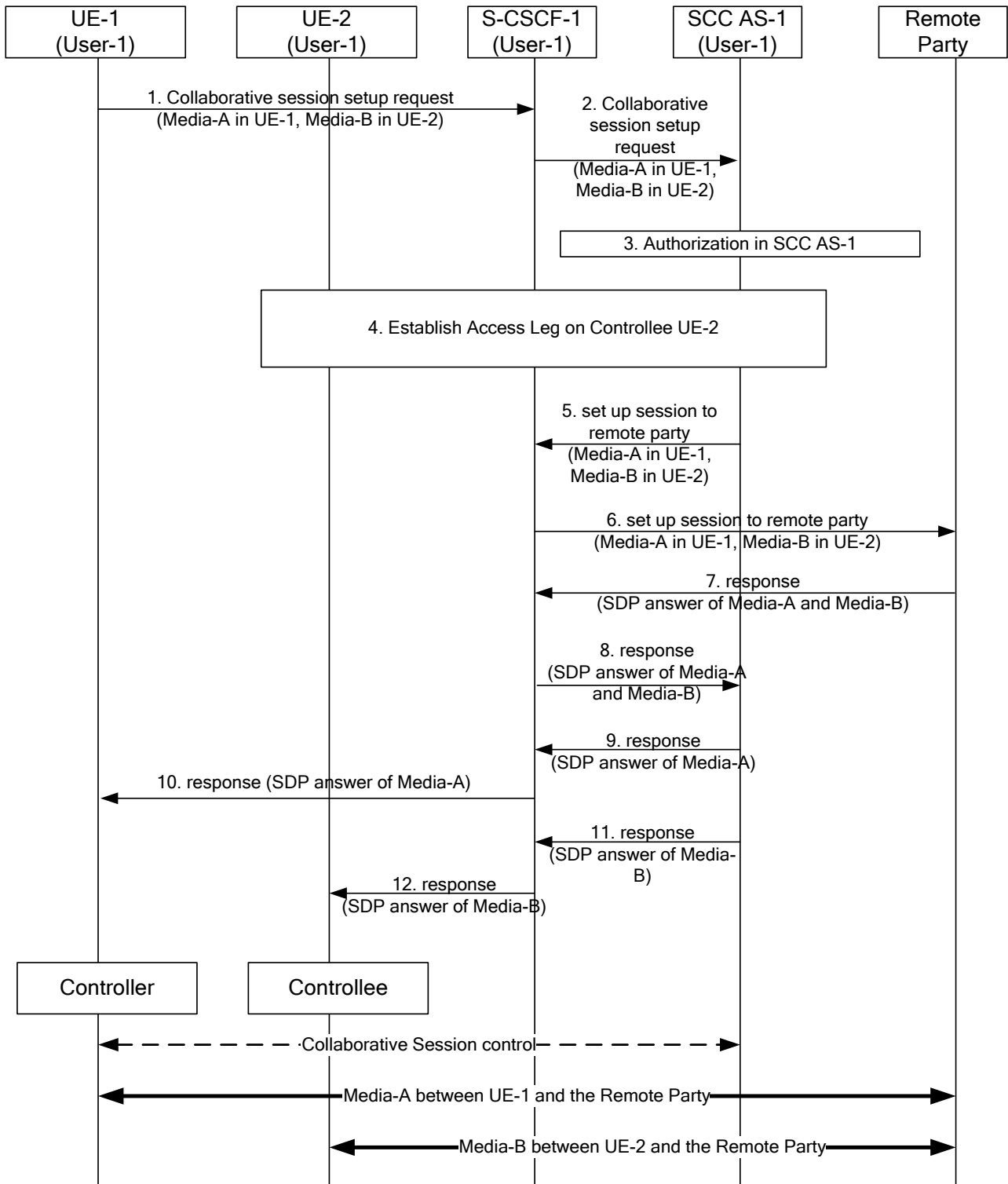
1. UE-1 sends a request to the SCC AS to establish a Collaborative Session with UE2 (with Media Flow-A on UE-1 and Media Flow-B on UE-2), and an IMS session with a remote party. The IUT request shall include the enough information for the SCC AS to:
  - identify media flows associated with each UE;
  - keep the control of the Collaborative Session in UE-1.

2. The SCC AS verifies UE-1 and UE-2 belong to the same subscription and establishes the Access Leg with UE-1 for Media Flow-A, and the Access Leg with UE-2 for Media Flow-B.
3. The SCC AS sends the IMS session establishment request on to the remote party for a session with Media Flows A and B and completes the setup of the access legs on UE1 and UE2.
4. The SCC AS indicates to UE1 that the requested Collaborative and IMS sessions are established.

A Collaborative Session is established, for which UE-1 becomes the Controller UE and UE-2 becomes a Controllee UE.

#### 6.1.3.2.1.2 Alternative 2

The following information flow shows the Collaborative Session establishment procedure when there is no ongoing IMS session. Concurrent with a normal session set-up towards a remote party, UE-1 wants to establish a Collaborative Session, which is anchored at the SCC AS, with a new Media Flow -A on itself and a new Media Flow -B on another UE-2.



**Figure 6.1.3.2.1.2-1: Establishment of Collaborative Session upon Originating IMS Session Setup: Same IMS subscription: Alternative 2**

1. UE-1 sends a session setup request towards the remote party in order to set up a Collaborative Session to remote party with Media-A in UE-1, and with Media-B in UE-2. The session setup request includes enough information for the network to:
  - identify the remote party of the session setup request;
  - identify that Media-A shall be established in UE-1;
  - identify that Media-B shall be established in UE-2 and the media type associated with Media-B (e.g., video);



- keep the Collaborative Session control of Media-A and Media-B in UE-1.
- 2. S-CSCF-1 forwards the session setup request to SCC AS-1 according to iFC configuration.
- 3. SCC AS-1 authorizes the request from UE-1.
- 4. SCC AS-1 sends a request to establish an Access Leg at UE-2 for Media-B.

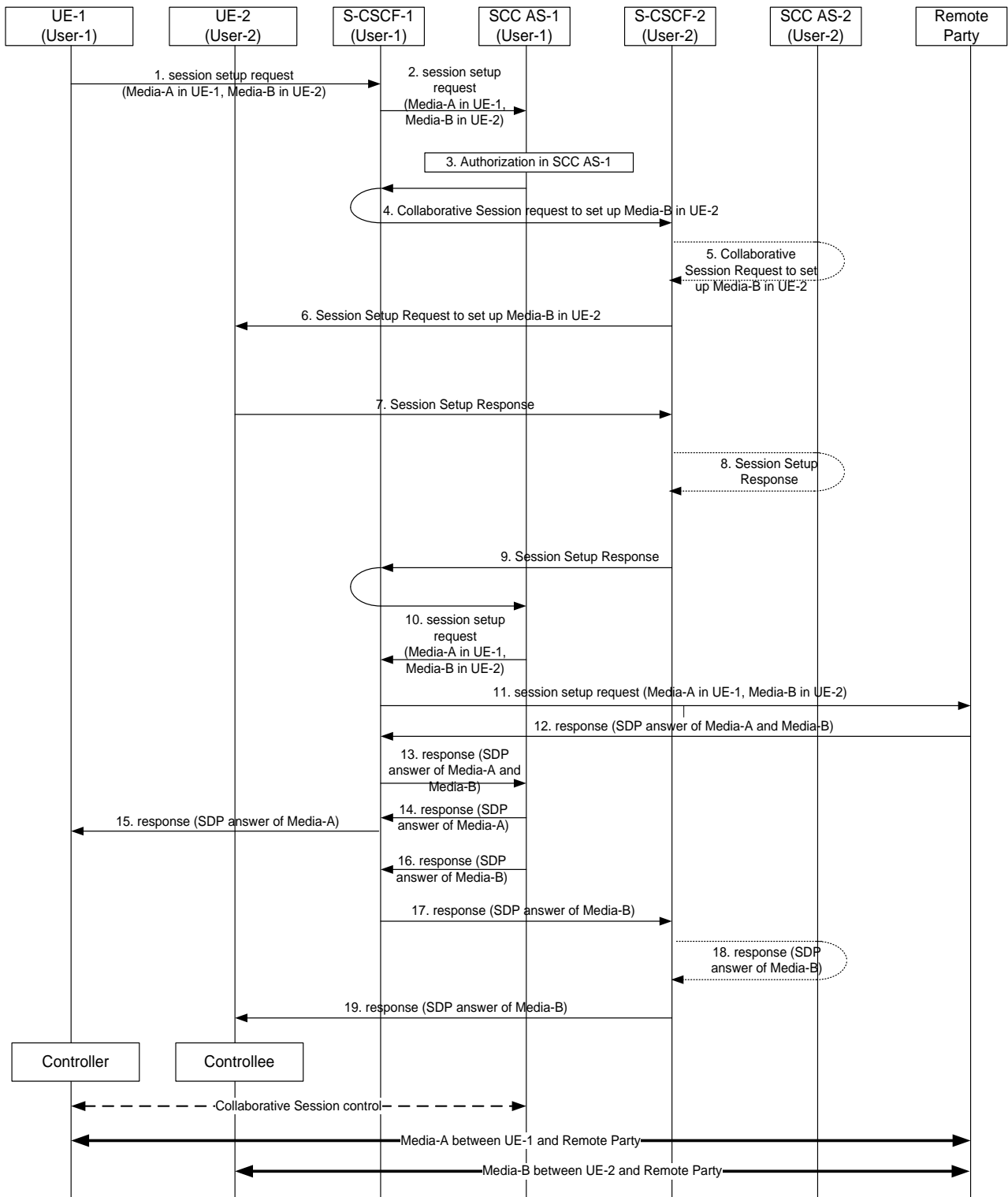
NOTE: In order to obtain the full media description of Media-B, it is necessary to establish the Access Leg at UE-2 prior to engaging the remote party so that the SCC AS can send a proper (complete) SDP offer towards the remote party in step 5.

- 5. ~ 6. SCC AS-1 sends session setup request towards the remote party to set up remote leg, and S-CSCF-1 forwards the session setup request to remote party.
- 7. ~ 8. Remote party sends response with SDP answer of Media-A and Media-B towards SCC AS-1, and S-CSCF-1 forwards the response to SCC AS-1.
- 9. SCC AS-1 sends response with SDP answer of Media-A towards UE-1 to establish Media-A in UE-1, and the response also carries the information of Media-B.
- 10. S-CSCF-1 forwards the response towards UE-1.
- 11. SCC AS-1 sends response with SDP answer of Media-B towards UE-2 to establish Media-B in UE-2.
- 12. S-CSCF-1 forwards the response towards UE-2.

After the above operation, a Collaborative Session has been established between UE-1 and UE-2 with: UE-1 as the Controller UE, UE-2 as a Controllee UE, Media-A between UE-1 and the remote party, and Media-B between UE-2 and the remote party.

#### 6.1.3.2.2 Controller UE and Controllee UE belong to different IMS subscriptions

The information flow below illustrates a scenario in which a Collaborative Session is established concurrent with the setup of an originating IMS session. The Controller UE invites a UE that belongs to a different subscription to participate in the Collaborative Session.



**Figure 6.1.3.2.2-1: Establishment of Collaborative Session upon originating IMS session setup: Controller UE and Controllee UE belong to different IMS subscriptions**

1. UE-1 sends a session setup request (can be INVITE message in SIP protocol) towards the remote party. The session setup request includes enough information for the network to:
  - identify the remote party of the session setup request;
  - identify that Media-A shall be established in UE-1;
  - identify that Media-B shall be established in UE-2 and the media type associated with Media-B (e.g., video);

- keep the Collaborative Session control of Media-A and Media-B in UE-1.
2. S-CSCF-1 forwards the session setup request to SCC AS-1 according to iFC configuration.
  3. SCC AS-1 authorizes the request from UE-1.
  4. SCC AS-1 sends a request towards UE-2 for setting up Media-B in UE-2. The request includes enough information for the network to:
    - identify that the source of the request is UE-1;
    - identify that Media-B shall be established in UE-2 and the media type associated with Media-B (e.g., video);
    - keep the Collaborative Session control of Media-B in UE-1.
 S-CSCF-1 forwards the request towards UE-2.
  5. If UE-2 is an IUT subscriber, the request is routed via SCC AS-2. SCC AS-2 notes that this request relates to the establishment of a Collaborative Session so that any requests by UE-2 related to this Collaborative Session will be sent towards SCC AS-1. A Collaborative Session setup request is then routed on towards UE-2. If UE-2 is not an IUT subscriber, S-CSCF-2 routes the request according to normal procedures.
  6. The session setup request is forwarded to UE-2. The request includes enough information for UE-2 to identify that the source of the request is UE-1.
  7. UE-2 sends a session setup response towards SCC AS-1. This response contains the full media description of Media-B.
  - 8- 9. S-CSCF-2 routes the response back towards SCC AS-1, via SCC AS-2 if UE-2 is an IUT subscriber.
  10. SCC AS-1 sends a session setup request towards the remote party to set up remote leg.
  11. S-CSCF-1 routes the session setup request to the remote party.
  12. Remote Party sends response with SDP answer of Media-A and Media-B towards SCC AS-1.
  13. S-CSCF-1 forwards the response to SCC AS-1.
  14. SCC AS-1 sends response with SDP answer of Media-A towards UE-1 to establish Media-A, and the response also carries the information of Media-B.
  15. S-CSCF-1 forwards the response towards UE-1.
  16. SCC AS-1 sends response with SDP answer of Media-B towards UE-2 to establish Media-B.
  17. S-CSCF-1 forwards the response towards UE-2.
  18. If UE-2 is an IUT subscriber, S-CSCF-2 routes the response via SCC AS-2. SCC AS-2 then forwards the response towards S-CSCF-2.
  19. S-CSCF-2 forwards the response towards UE-2.

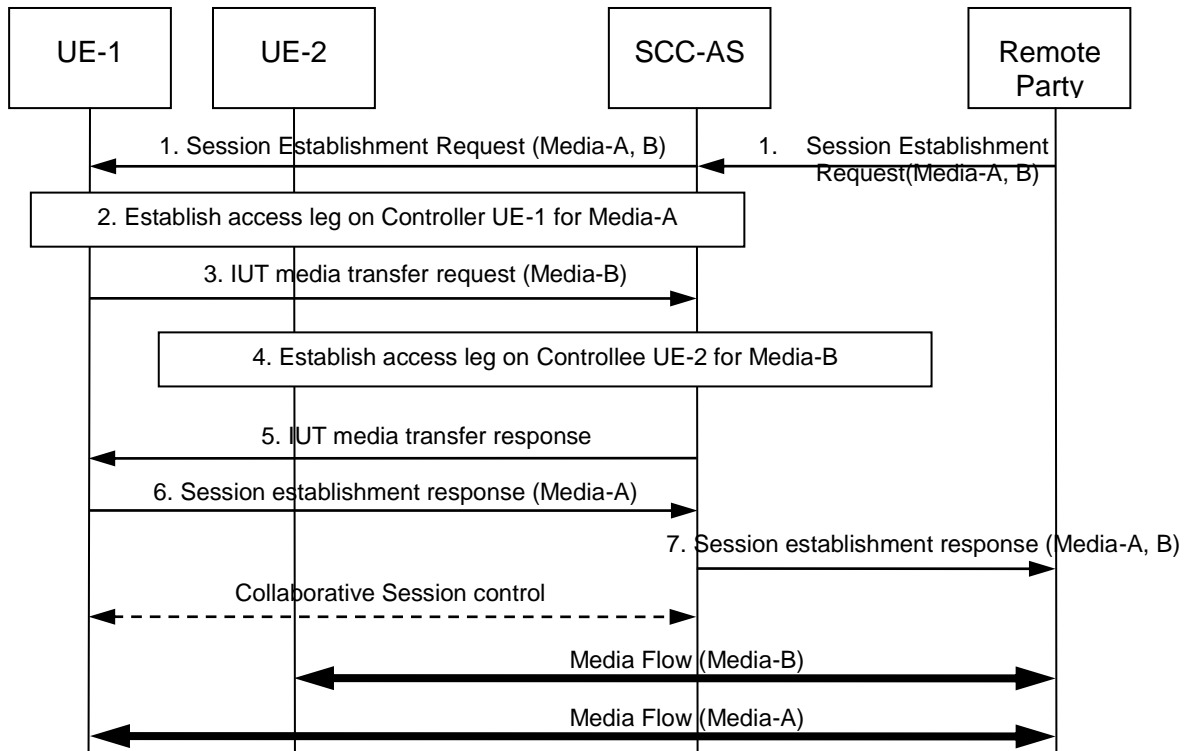
After the above operations, a Collaborative Session is established, for which UE-1 becomes the Controller UE and UE-2 becomes a Controllee UE. Media-A is established between Controller UE-1 and the remote party, and Media-B is established between Controllee UE-2 and the remote party.

### 6.1.3.3 Establishment of Collaborative Session upon Terminating IMS Session Setup

#### 6.1.3.3.1 Controller UE and Controllee UE belong to same IMS subscription

##### 6.1.3.3.1.1 Alternative 1

A remote party establishes an IMS session with UE1. UE1 establishes a Collaborative Session with UE2 belonging to the same IMS subscription as part of this session set-up procedure. The Collaborative Session is anchored at the SCC AS. UE-1 may establish the Collaborative Session with one or more media being established on the Controllee UE and with zero or more media on the Controller (itself). Following is an information flow for this procedure.



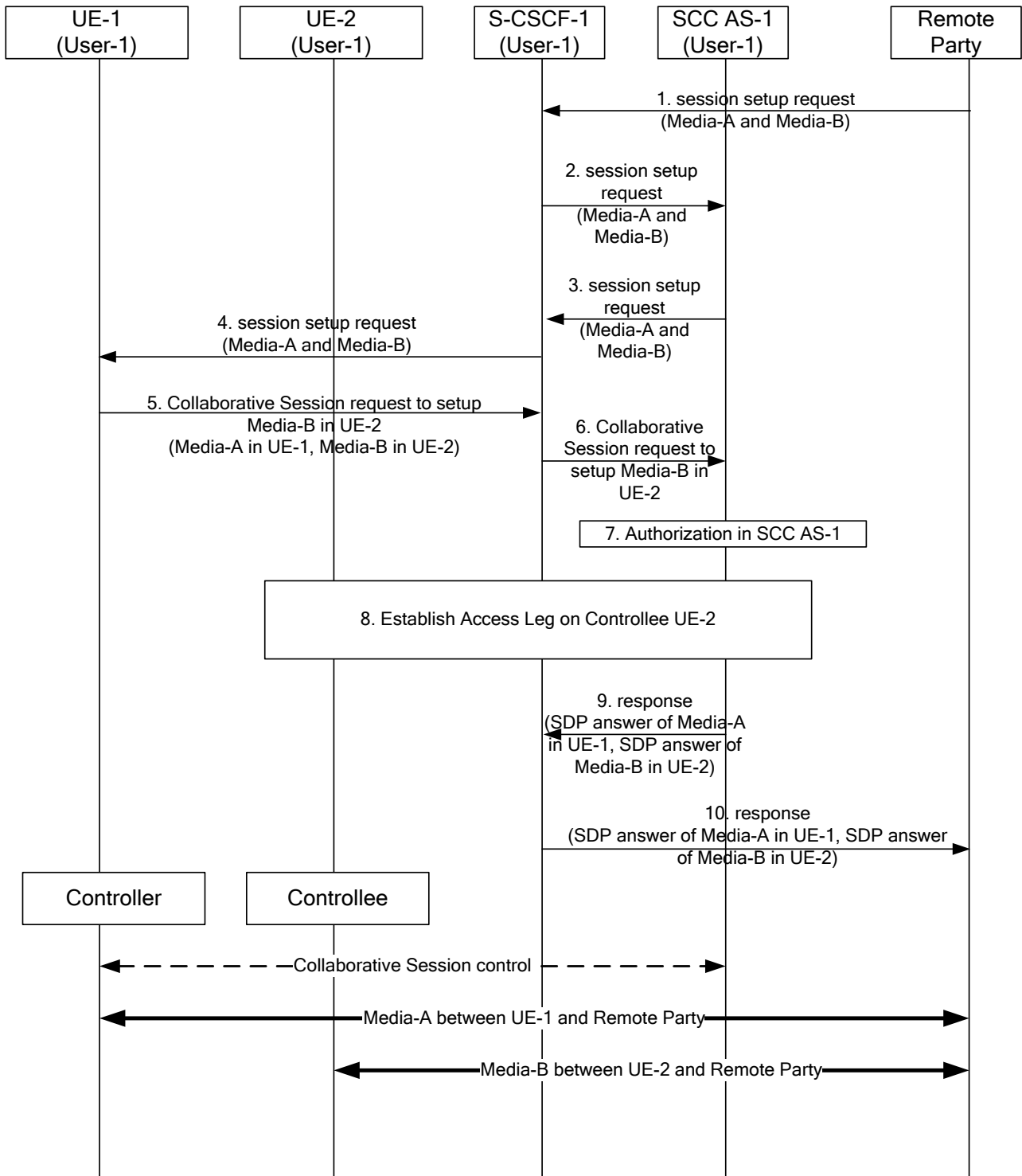
**Figure 6.1.3.3.1.1-1: Establish Collaborative Session on IMS session termination**

1. The remote party sends a session establishment request to UE-1 for Media Flows A and B. The session is anchored at the SCC AS and the session establishment request is forwarded to UE-1.
2. The SCC AS establishes the Access Leg at UE-1 for Media Flow-A.
3. UE-1 sends an IUT media transfer request to the SCC AS to establish the session with Media Flow-A on UE-1 and Media Flow-B on UE-2. The IUT media transfer request shall include the enough information for the SCC AS to:
  - identify that the transferred Media Flow is Media Flow -B;
  - identify that the target of the transferred Media Flow is UE-2;
  - keep the control of the Collaborative Session in UE-1.
4. The SCC AS establishes the Access Leg at UE-2 for Media Flow-B.
5. The SCC AS sends an IUT media transfer response to UE-1 indicating that UE-2 accepts the media.
6. UE-1 sends a successful session establishment response for Media Flow-A.
7. The SCC AS sends the session establishment response on to the remote party for a session with Media Flows A and B.

A Collaborative Session is established, for which UE-1 becomes the Controller UE and UE-2 becomes a Controllee UE.

#### 6.1.3.3.1.2 Alternative 2

The following information flow shows the Collaborative Session establishment procedure when there is no ongoing IMS session. Concurrent with the response to a normal session invitation received from a remote party, UE-1 wants to establish a Collaborative Session, which is anchored at the SCC AS, with the requested Media Flow-A on itself and the requested Media Flow-B on another UE-2.



**Figure 6.1.3.3.1.2-1: Establishment of Collaborative Session upon Terminating IMS Session Setup: Same IMS subscription: Alternative 2**

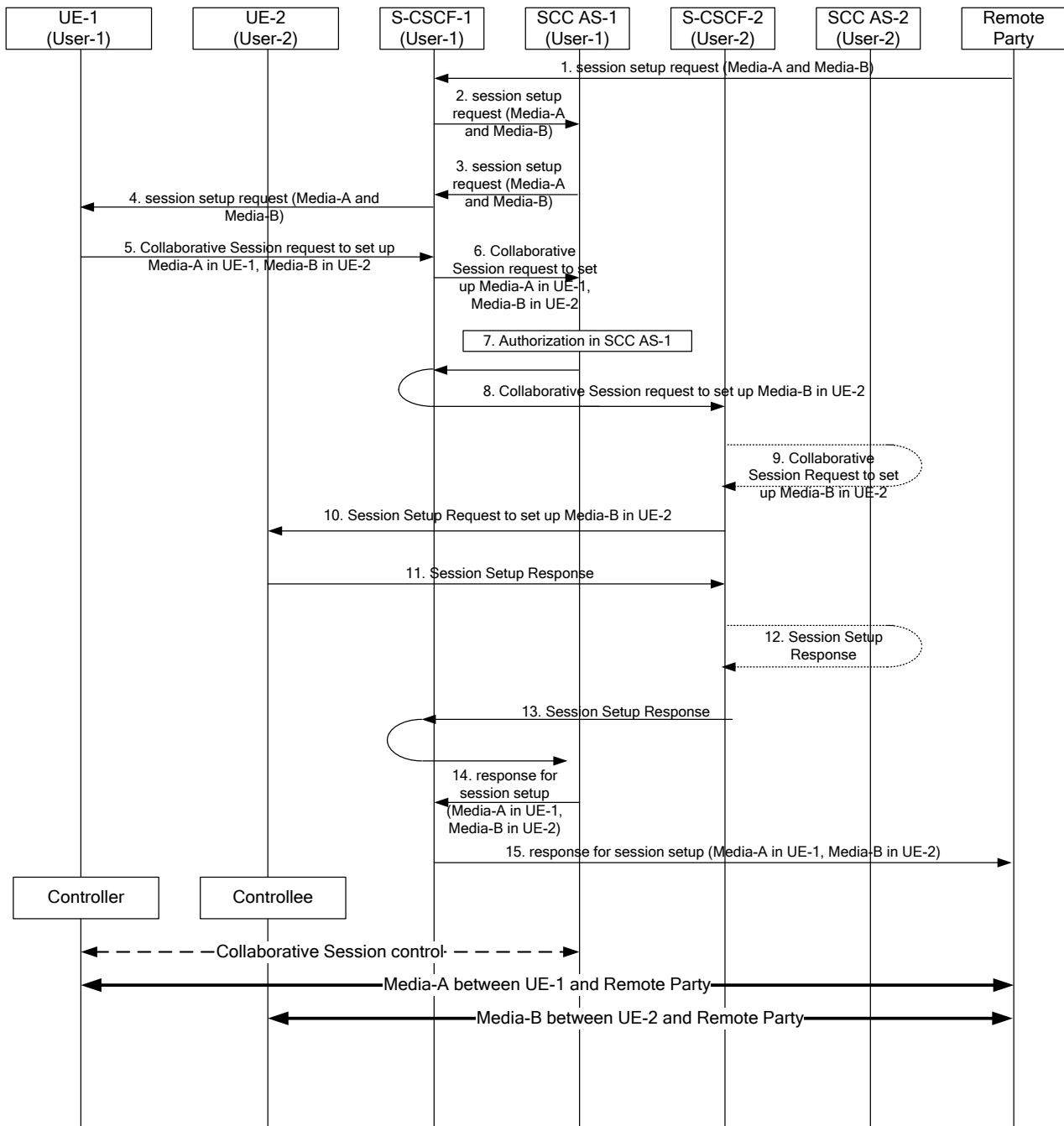
1. Remote Party sends a session setup request towards UE-1 to set up Media-A and Media-B with UE-1.
2. S-CSCF-1 forwards the session setup request to SCC-AS-1 according to iFC configuration.
3. SCC AS-1 sends the session setup request back to S-CSCF-1.
4. S-CSCF-1 forwards the session setup request towards UE-1.
5. UE-1 sends a request towards SCC AS-1 to setup Media-B in UE-2. The session setup request includes enough information for the network to:

- identify that Media-B shall be established in UE-2 and the requested media type associated with Media-B (e.g., video);
  - keep the Collaborative Session control in UE-1.
6. S-CSCF-1 forwards the session setup request to SCC AS-1 according to iFC configuration.
  7. SCC AS-1 authorizes the request from UE-1.
  8. SCC AS-1 sends a request to establish an Access Leg at UE-2 for Media-B.
  9. ~ 10. SCC AS-1 sends a response towards the remote party. The response carries the SDP answer of Media-A in UE-1 and Media-B in UE-2. S-CSCF-1 forwards the successful response towards the remote party.

After the above operation, a Collaborative Session is established, for which UE-1 becomes the Controller UE and UE-2 becomes a Controllee UE. Media-A is established between Controller UE-1 and the remote party, and Media-B is established between Controllee UE-2 and the remote party.

#### 6.1.3.3.2 Controller UE and Controllee UE belong to different IMS subscriptions

The information flow below illustrates a scenario in which a Collaborative Session is established concurrent with the setup of a terminating IMS session. The Controller UE invites a UE that belongs to a second user to participate in the Collaborative Session.



**Figure 6.1.3.3.2-1: Establishment of Collaborative Session upon terminating IMS Session setup: Controller UE and Controllee UE belong to different IMS subscriptions**

- 1 ~ 4. The remote party sends a session setup request towards UE-1 to establish Media-A and Media-B.
- 5. UE-1 wants to transfer Media-B to UE-2. UE-1 sends a request towards SCC AS-1 to set up Media-B in UE-2. The request includes enough information for the network to:
  - identify that Media-A is accepted and shall be established in UE-1;
  - identify that Media-B shall be established in UE-2 and the media type associated with Media-B (e.g., video);
  - keep the Collaborative Session control in UE-1.
- 6. S-CSCF-1 forwards the request to SCC AS-1.
- 7. SCC AS-1 authorizes the request from UE-1.

8. SCC AS-1 sends a request towards UE-2 for setting up Media-B in UE-2. The request includes enough information for the network to:
  - identify the source of the request as UE-1;
  - identify the remote party;
  - identify that Media-B shall be established in UE-2;
  - keep the Collaborative Session control of Media-B in UE-1.S-CSCF-1 routes the request towards UE-2.
9. If UE-2 is an IUT subscriber, the request is routed via SCC AS-2. SCC AS-2 notes that this request relates to the establishment of a Collaborative Session so that any requests by UE-2 related to this Collaborative Session will be forwarded back towards SCC AS-1. A Session Setup request is then routed on towards UE-2. If UE-2 is not an IUT subscriber, S-CSCF-2 routes the request according to normal procedures.
10. S-CSCF-2 forwards the Session Setup request towards UE-2.
11. UE-2 sends the session setup response towards SCC AS-1.
12. If UE-2 is an IUT subscriber, S-CSCF-2 routes the session setup response via SCC AS-2..
13. S-CSCF-2 forwards the session setup response towards SCC AS-1.
14. SCC AS-1 sends a response with SDP answer of Media-A in UE-1 and Media-B in UE-2 towards the remote party.
15. S-CSCF-1 forwards the response towards the remote party.

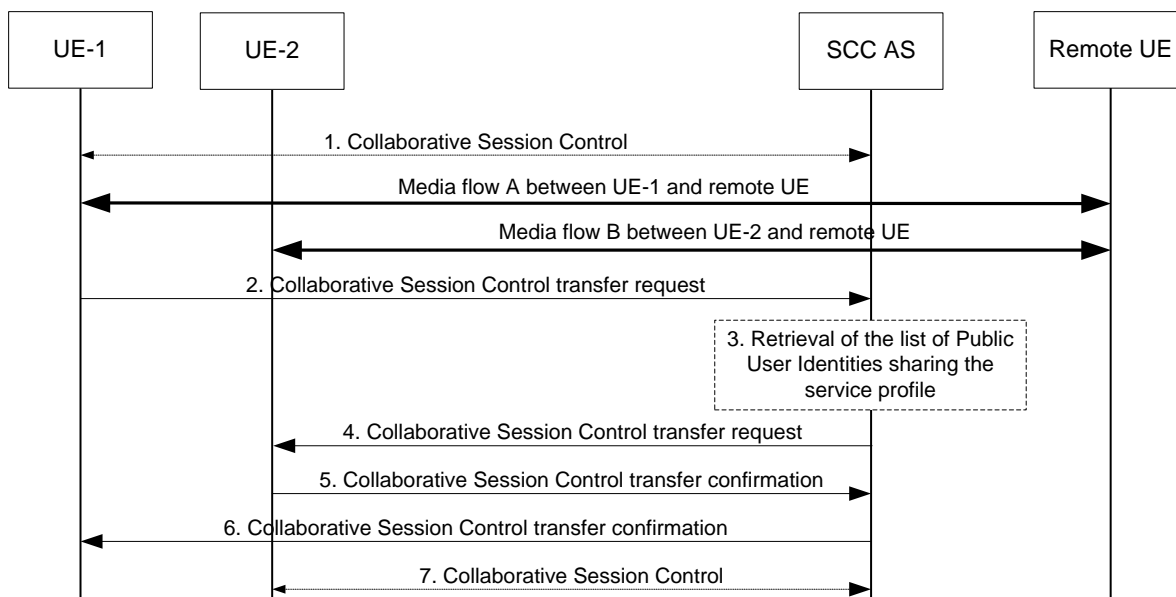
After the above operation, a Collaborative Session is established, for which UE-1 becomes the Controller UE and UE-2 becomes a Controllee UE. Media-A is established between Controller UE-1 and the remote party, and Media-B is established between Controllee UE-2 and the remote party.

#### 6.1.3.4 Transfer of Collaborative Session Control

##### 6.1.3.4.1 Controller UE transferring Collaborative Session Control to a Controllee UE (same IMS subscription)

UE-1 and UE-2 are involved in a Collaborative Session with a remote UE. The Collaborative Session is anchored at the SCC AS. UE-1 is the Controller UE of the Collaborative Session. UE-1 wishes to transfer the Collaborative Session Control to UE-2. The media flows to UE-1 and UE-2 from the remote UE remain unaffected. Following is an information flow for this procedure.





**Figure 6.1.3.4.1-1: Controller UE initiated transfer of Collaborative Session Control**

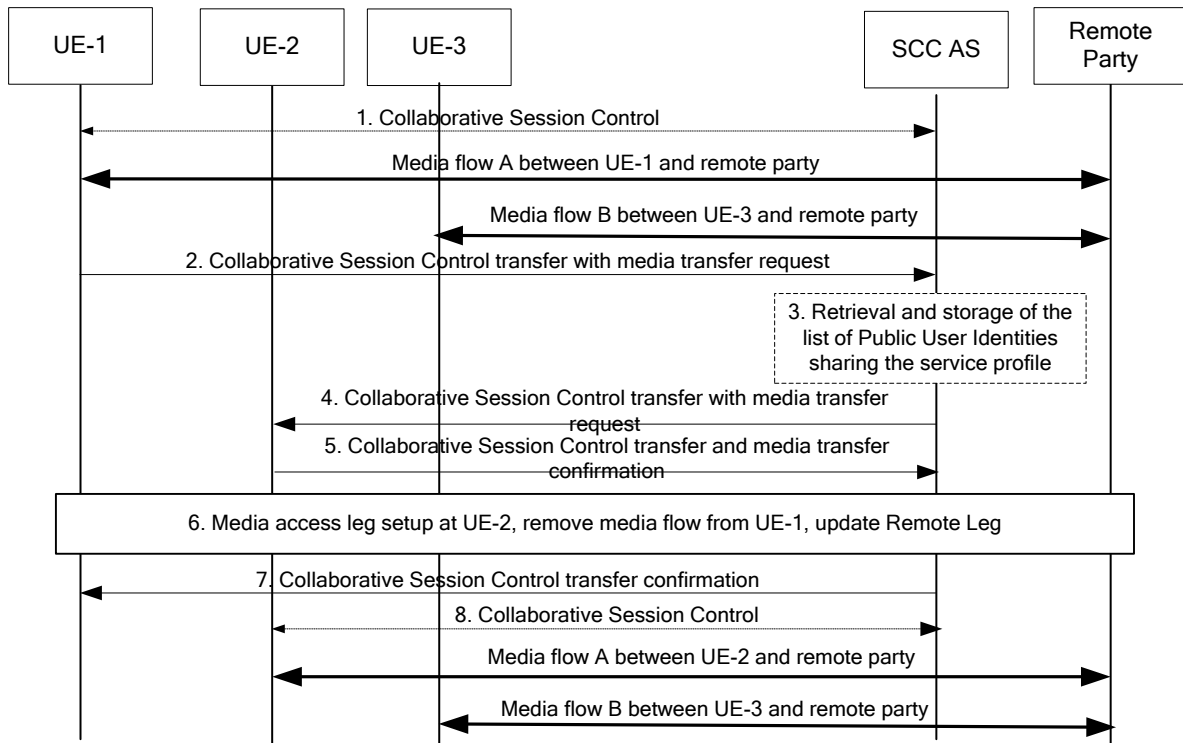
1. A Collaborative Session is established between UE-1 and UE-2 and a remote UE with UE-1 acting as the Controller UE and the UE-2 acting as a Controllee UE. Each UE has a media flow with the remote UE.
2. UE-1 wishes to transfer the Collaborative Session Control to UE-2. However, none of the existing media flows are affected. It sends a request to SCC AS to relinquish Collaborative Session Control. This request includes a registered Public User Identity or public GRUU of UE-2.

**NOTE:** If UE-2 has several Public User Identities registered, UE-1 needs to select a Public User Identity sharing the service profile of the Public User Identity used by UE-1, in order for this procedure to succeed.

3. If the SCC AS does not have the list of Public User Identities sharing the service profile with the Public User Identity used by UE-1 for the Collaborative Session, it retrieves this information. If the Collaborative Session Control transfer request indicates that UE-2 has the same Public User Identity (but different public GRUU) as UE-1, this step is skipped.
4. The SCC AS ensures that UE-2 can act as the Controller UE for this Collaborative Session, and that the Public User Identity used by UE-2 shares the service profile with the Public User Identity used by UE-1 for the Collaborative Session. Then it sends a message to UE-2 requesting UE-2 to assume the role of Controller UE for this on-going Collaborative Session.
5. UE-2 accepts the role of Controller UE for this Collaborative Session and indicates its acceptance to SCC AS.
6. SCC AS in turn provides an acknowledgement to UE-1 confirming that UE-2 is the new Controller UE for the Collaborative Session and removing Collaborative Session Control from UE-1.
7. UE-2 has become the Controller UE and UE-1 has become the Controllee UE.

#### 6.1.3.4.2 Controller UE transferring Collaborative Session Control to another UE with Media Transfer (same IMS subscription)

UE-1 and UE-3 are involved in a collaborative session with a remote party. The collaborative session is anchored at the SCC AS. UE-1 is the Controller UE of the Collaborative Session. UE-1 wishes to transfer the Collaborative Session Control to UE-2 along with the media flow on UE-1. The media flow to UE-3 from the remote party remains unaffected. Following is an information flow for this procedure.



**Figure 6.1.3.4.2-1: Controller UE initiated transfer of Collaborative Session Control with transfer of media flow**

1. A Collaborative Session is established between UE-1 and UE-3 and a remote party with UE-1 acting as the Controller UE and the UE-3 acting as a Controllee UE. Each UE has a media flow with the remote party.
2. UE-1 wishes to transfer the Collaborative Session Control along with media flow A to UE-2. UE-1 sends a request to SCC AS to transfer media flow A and relinquish Collaborative Session Control. This request includes a registered Public User Identity or GRUU of UE-2.
3. If the SCC AS does not have the list of Public User Identities that share the service profile with the Public User Identity used by UE-1 for the Collaborative Session, the SCC AS retrieves this information. If the Collaborative Session Control transfer request indicates that UE-2 has the same Public User Identity (but different public GRUU) with UE-1, this step is skipped.
4. The SCC AS ensures that UE-2 can act as the Controller UE for this Collaborative Session, and that the Public User Identity used by UE-2 shares the service profile with the Public User Identity used by UE-1 for the Collaborative Session. The SCC-AS then sends a message to UE-2 requesting UE-2 to transfer media flow A and assume the role of Controller UE for this on-going Collaborative Session.
5. UE-2 accepts transfer of media A and accepts the role of Controller UE for this collaborative session and indicates its acceptance to the SCC AS.
6. The SCC AS removes Media Flow-A from UE-1, and updates the Remote Leg using the Remote Leg Update procedure.
7. SCC AS in turn provides an acknowledgement to UE-1 confirming that UE-2 has accepted the media transfer and is the new Controller UE for the collaborative session .
8. UE-2 has become the Controller UE and UE-1 has become the Controllee UE and Media A is now transferred to UE-2. If there is no media flow remaining on UE-1, UE-1 is released from the Collaborative Session.

### 6.1.3.4.3 Session Control Transfer (CS media with Transfer of media)

#### 6.1.3.4.3.1 General

These subsections show the information flow how to transfer media and control of a Collaborative Session from UE-1 to UE-2, where the incoming session is delivered over the Gm or I1 reference point and the media is established via CS network. It is assumed that UE-1 and UE-2 use Public User Identities that have the same service profile (and thus belong to the same IMS subscription).

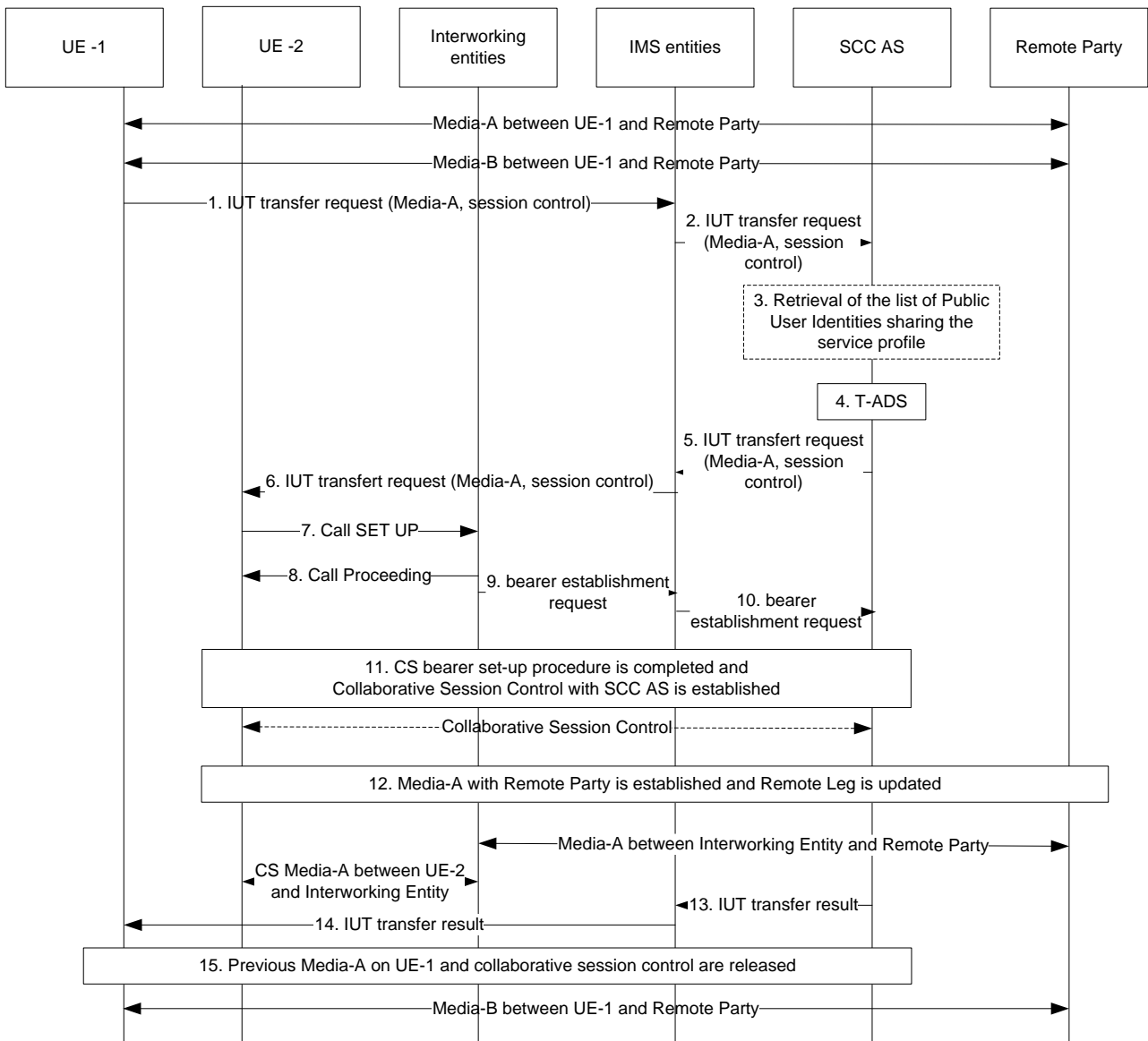
NOTE 1: ICS capabilities are required by UE-2.

NOTE 2: Currently, there are no supporting stage 1 requirements for the information flows in this clause.

#### 6.1.3.4.3.2 Collaborative Session Control and Media Transfer using Gm reference point

The following information flow shows how to transfer media and control of a Collaborative Session from UE-1 to UE-2, where the incoming session is delivered over the Gm reference point and the media is established via CS network. It is assumed that UE-1 and UE-2 belong to the same IMS subscription. Interworking entities correspond to MSC Server enhanced for ICS, and follows termination procedures with CS media using Gm reference point shown in TS 23.292 [3].

NOTE 1: When the interworking entities correspond to MSC Server and MGCF the CS bearer setup procedures follow the steps 11-17 in the Figure 7.4.2.2.2-2 of the TS 23.292 [3].



**Figure 6.1.3.4.3.2-1: Flow for Controller UE initiated media/session control transfer – using Gm reference point**

1. UE-1 decides to transfer the Media-A and Collaborative Session Control to UE-2 and sends IMS entities a transfer request indicating that the current Collaborative Session Control and Media-A is to be transferred to UE-2. This request includes a registered Public User Identity or public GRUU of UE-2.

NOTE 2: If UE-2 has several Public User Identities registered, UE-1 needs to select a Public User Identity sharing the service profile of the Public User Identity used by UE-1, in order for this procedure to succeed.

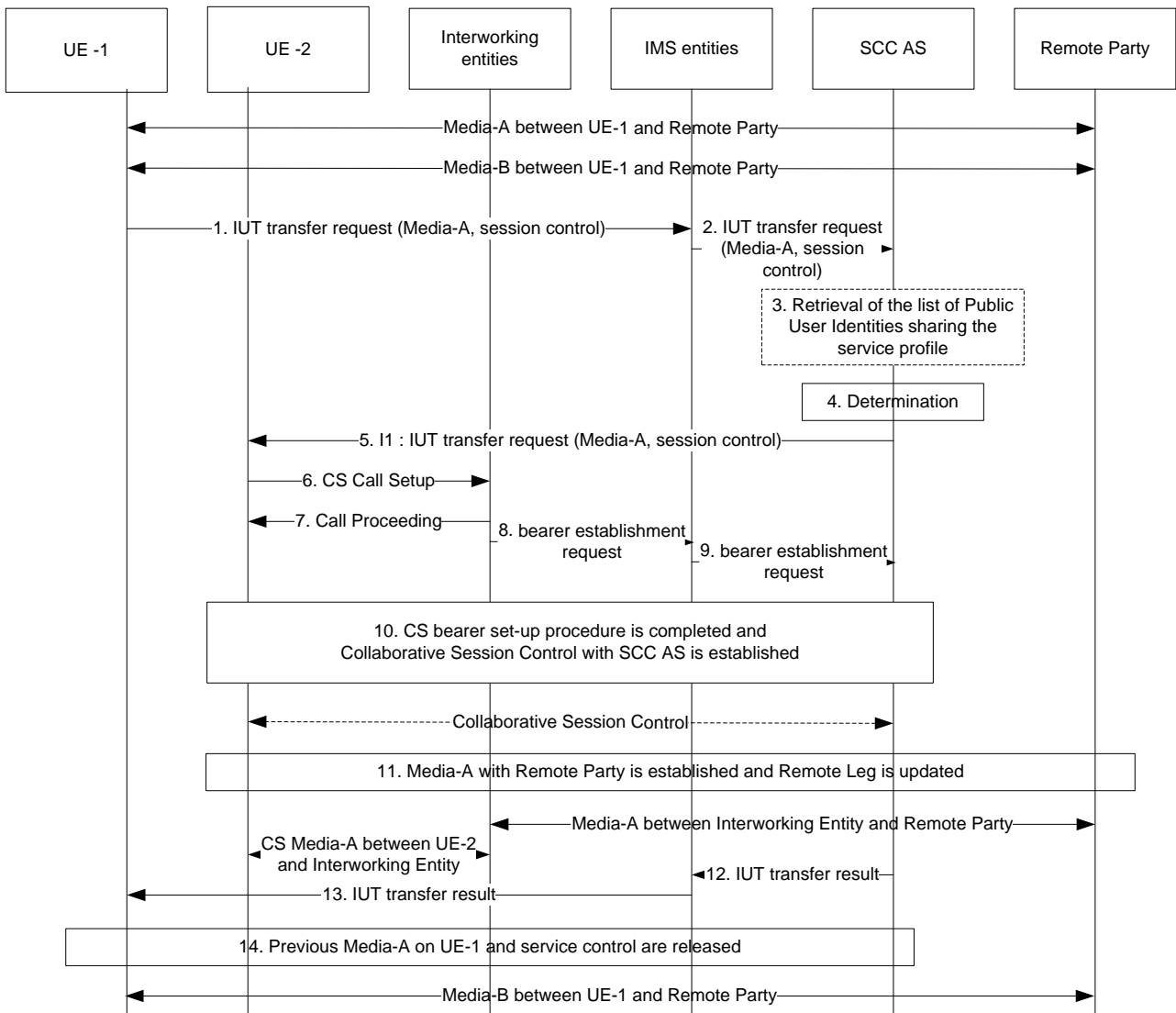
2. The IMS entities forward the transfer request to the SCC AS.
3. If the SCC AS does not have the list of Public User Identities sharing the service profile with the Public User Identity used by UE-1 for the Collaborative Session, it retrieves this information. If the Collaborative Session Control transfer request indicates that UE-2 has the same Public User Identity (but different public GRUU) with UE-1, this step is skipped.
4. The SCC AS performs T-ADS as specified in TS 23.292 [3] and chooses the CS domain for the setup of the Media-A. If UE-2 is not allowed to act as a Controller UE or if the transfer request can't be performed successfully, the SCC AS rejects the request with the reason and stops following the steps below.
5. The SCC AS generates and sends IMS entities an IUT transfer request indicating to transfer the Media-A and collaborative session control to UE-2.

6. The IMS entities forward the received IUT transfer request to the UE-2.
7. The UE-2 accepts the transferred control of the Collaborative Session and sends a CS call setup message to the Interworking entities to accept the transferred media.
8. The Interworking entities respond with a call proceeding message and begins to set up the CS Bearer Control Signalling Path.
- 9-10. The Interworking entities send a session establishment request towards the SCC AS via IMS entities.
11. The UE-2 and SCC AS complete the setup of the Collaborative Session Control Signalling Path. The Collaborative Session Control between UE-2 and the SCC AS is established over Gm reference point. UE-2 becomes the Controller UE for the Collaborative Session.
12. Media-A between UE-2 and remote party is established. The remote leg is updated accordingly.
13. After the successful transfer of the Collaborative Session Control and Media-A onto the UE-2, the SCC AS sends the IMS entities an IUT transfer result message.
14. The IMS entities forward the IUT transfer result message to the UE-1.
15. The previous Media-A and Collaborative Session Control are released. UE-1 becomes a Controllee UE.

#### 6.1.3.4.3.3 Collaborative Session Control and Media Transfer using I1 reference point

The following information flow shows how to transfer media and Collaborative Session Control from UE-1 to UE-2, where the incoming session is delivered over the I1 reference point and the media is established via CS network. It is assumed that UE-1 and UE-2 belong to the same IMS subscription. Interworking entities correspond to MSC enhanced for ICS, and follows termination procedures with CS media using I1 reference point shown in TS 23.292 [3].

NOTE 1: When the interworking entities correspond to MSC Server and MGCF the CS bearer setup procedures follow the steps 11-17 in the Figure 7.4.2.2.2-2 of the TS 23.292 [3].



**Figure 6.1.3.4.3.3-1: Flow for Controller UE initiated media/session control transfer – using I1 reference point**

1. UE-1 decides to transfer the Media-A and collaborative session control to UE-2 and sends IMS entities a transfer request indicating that the current collaborative session control and Media-A is to be transferred to UE-2. This request includes a registered Public User Identity or public GRUU of UE-2.

NOTE 2: If UE-2 has several Public User Identities registered, UE-1 needs to select a Public User Identity sharing the service profile of the Public User Identity used by UE-1, in order for this procedure to succeed.

2. The IMS entities forward the transfer request to the SCC AS.
3. If the SCC AS does not have the list of Public User Identities sharing the service profile with the Public User Identity used by UE-1 for the Collaborative Session, it retrieves this information. If the Collaborative Session Control transfer request indicates that UE-2 has the same Public User Identity (but different public GRUU) with UE-1, this step is skipped.
4. The SCC AS performs T-ADS as specified in TS 23.292 [3] and chooses the CS domain for the setup of the Media-A. If UE-2 is not allowed to act as a Controller UE or if the transfer request can't be performed successfully, the SCC AS rejects the request with the reason and stops following the steps below.
5. The SCC AS generates and sends UE-2 an IUT transfer request via I1 reference point to UE-2 indicating to transfer the Media-A and collaborative session Control to UE-2.
6. The UE-2 accepts the transferred control of the Collaborative Session and sends a CS call setup message to the Interworking entities to accept the transferred media.

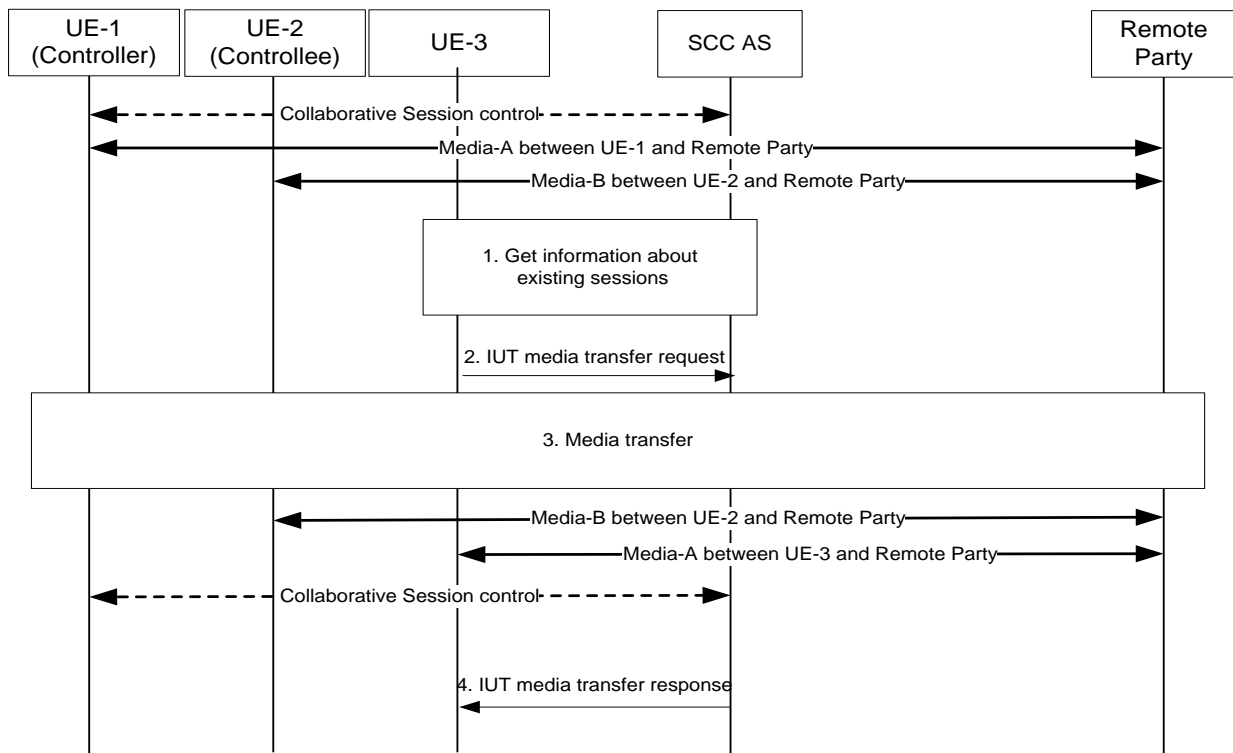
7. The Interworking entities respond with a call proceeding message and begins to set up the CS Bearer Control Signalling Path.
- 8-9. The Interworking entities send a session establishment request towards the SCC AS via IMS entities.
10. The UE-2, and SCC AS complete the setup of the Collaborative Session Control Signalling Path. The Collaborative Session Control between UE-2 and the SCC AS is established over II reference point. UE-2 becomes the Controller UE for the Collaborative Session.
11. Media-A between UE-2 and remote party is established. The remote leg is updated accordingly.
12. After the successful transfer of the Collaborative Session Control and Media-A onto the UE-2, the SCC AS sends the IMS entities an IUT transfer result message.
13. The IMS entities forward the IUT transfer result message to the UE-1.
14. The previous Media-A and Collaborative Session Control is released. UE-1 becomes a Controllee UE.

### 6.1.3.5 Media flow transfer initiated by the target UE

#### 6.1.3.5.1 Controller UE and Controllee UE belong to same IMS subscription

##### 6.1.3.5.1.1 Initiated by UE not participating in ongoing Collaborative Session

UE-1, UE-2 and UE-3 are under the same IMS subscription. UE-1 and UE-2 are involved in Collaborative Session with remote party. The figure below shows media flow transfer from UE-1 to UE-3 requested by UE-3.



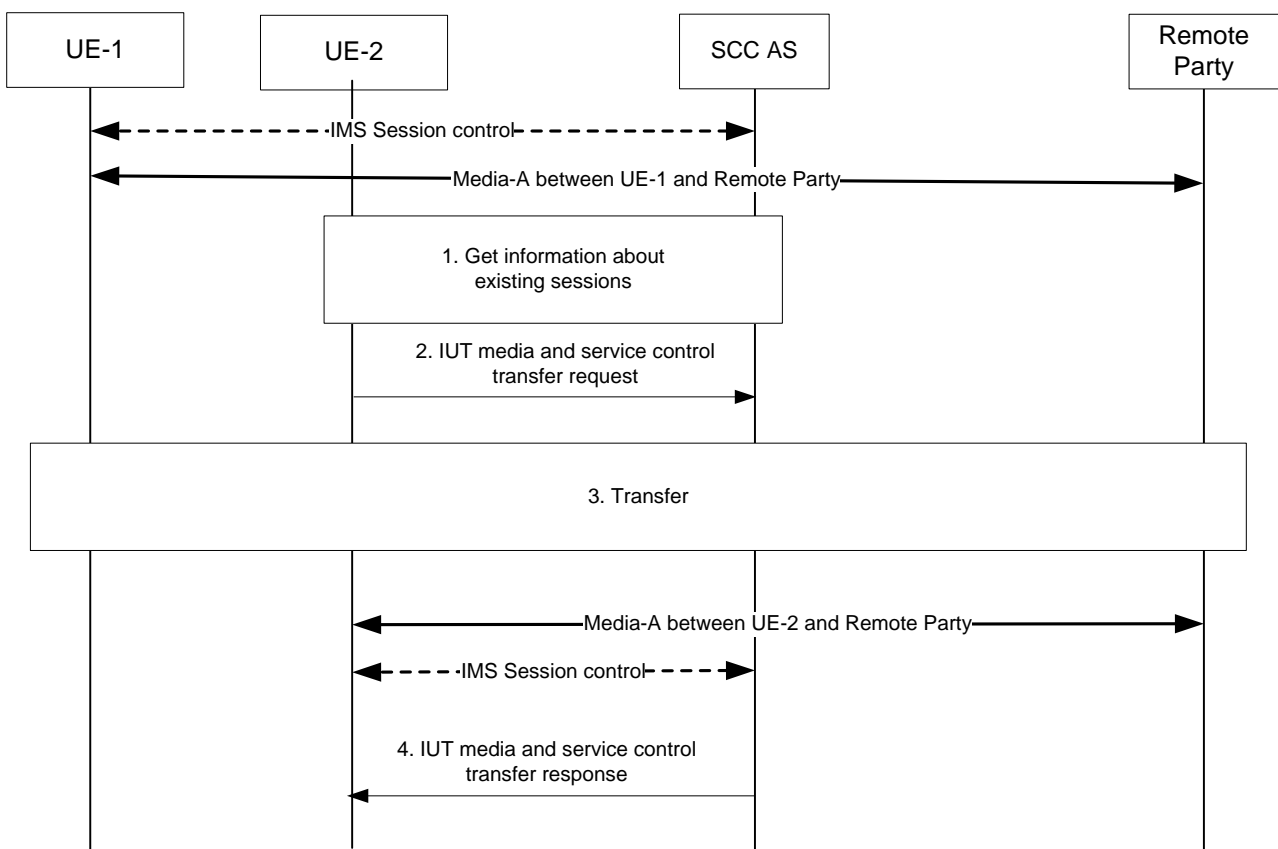
**Figure 6.1.3.5.1.1-1: Inter UE Transfer initiated by UE not participating in the collaborative session**

1. UE-3 obtains information about the existing sessions and their media flows.
2. UE-3 sends IUT media transfer request to transfer the Media-A from UE-1 to UE-3. The request shall include the enough information for the network to:
  - identify the targeted Collaborative Session;
  - identify that the transferred media flow is Media-A;
  - identify that the target of the transferred media flow is UE-3;

- keep the control of the Collaborative Session in UE-1;
  - other information.
3. The SCC AS requests the Controller UE-1 to authorize the pull request or the SCC AS authorizes the request on behalf of UE-1 (e.g. pre-configured). The SCC AS will also authorize that the target UE is of the same subscription. If the request is authorized, SCC AS continues in accordance with step 2 of clause 6a.3.1 in TS 23.237 [2], i.e. SCC AS establishes a session with UE-3 for the Media-A, removes Media-A from UE-1, and updates the Remote Leg using the Remote Leg Update procedure. The UE-3 becomes a new Controllee UE.
  4. The SCC AS sends IUT media transfer response to UE-3.

#### 6.1.3.5.1.2 Initiated by UE not participating in the session – no Collaborative Session established

UE-1 and UE-2 are under the same IMS subscription. UE-1 is involved in IMS session with remote party. The figure below shows session transfer from UE-1 to UE-2 requested by UE-2. Since all the media flow(s) are transferred from UE-1 to UE-2 simultaneously, the roles of the Controller UE and the Controllee UE are not applicable.



**Figure 6.1.3.5.1.2-1: Inter UE Transfer initiated by UE not participating in the session – no Collaborative Session established**

1. UE-2 obtains information about the existing sessions and their media flows.
2. UE-2 sends IUT media and service control transfer request. The request shall include enough information for the network to:
  - identify the transferred session;
  - identify the target of the transferred session is UE-2;
  - identify access leg of UE-1 to be transferred to UE-2.
3. The SCC AS requests the UE-1 to authorize the pull request or the SCC AS authorizes the request on behalf of UE-1 (e.g. pre-configured). The SCC AS will also authorize that the target UE is of the same subscription. If the



request is authorized, SCC AS continues in accordance with step 2 of clause 6a.6 in TS 23.237 [2], i.e. SCC AS establishes a session with UE-2 for the Media-A, removes Media-A from UE-1, and updates Remote Leg using the Remote Leg Update procedure.

4 The SCC AS sends IUT media and service control transfer response to UE-2.

6.1.3.5.1.3 Initiated by Controllee UE in ongoing Collaborative Session

UE-1 and UE-2 are under the same IMS subscription. UE-1 and UE-2 are involved in a Collaborative Session with remote party, in which UE-1 is the Controller UE and UE-2 is the Controllee UE. The figure below shows media flow transfer from UE-1 to UE-2 requested by UE-2.

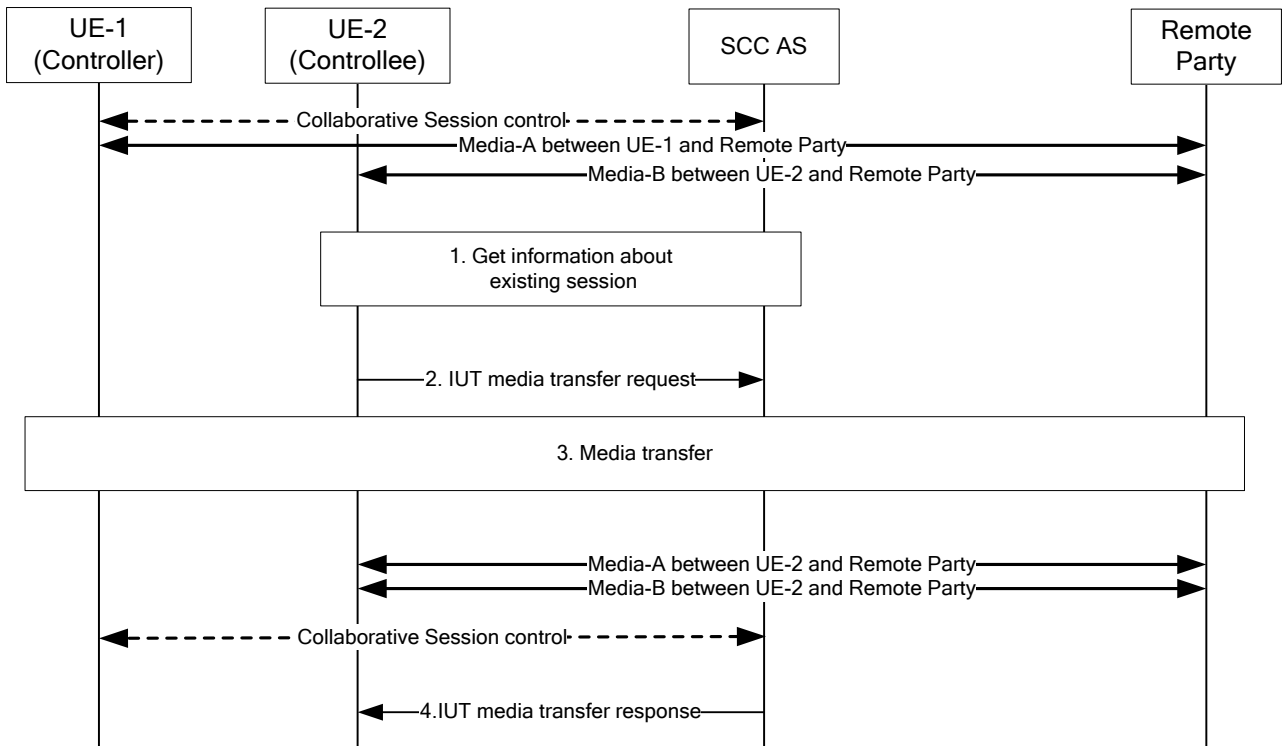


Figure 6.1.3.5.1.3-1: Inter UE Transfer initiated by Controllee UE in ongoing Collaborative Session

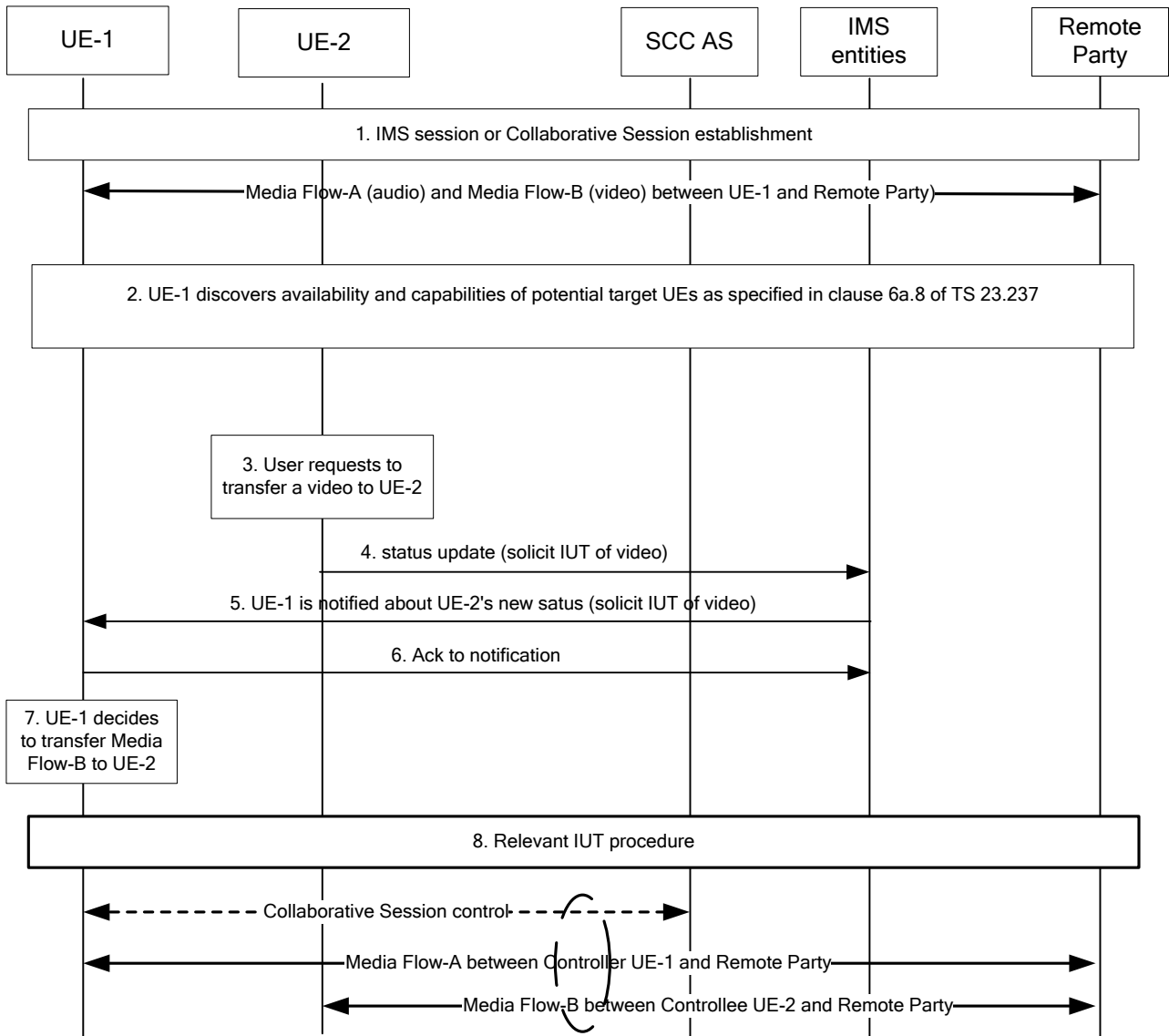
1. UE-2 obtains the information about the media flows in its current participating Collaborative Session.
2. UE-2 sends IUT media transfer request to transfer the Media-A from UE-1 to UE-2. The request shall include enough information for the network to:
  - identify that the transferred media flow is Media-A;
  - identify that the target of the transferred media flow is UE-2;
  - keep the control of the Collaborative Session in UE-1;
  - other information.
3. The SCC AS requests the Controller UE-1 to authorize the pull request or the SCC AS authorizes the request on behalf of UE-1 (e.g. pre-configured). If the request is authorized, SCC AS continues in accordance with step 2 of clause 6a.3.1 in TS 23.237 [2] to transfer Media-A to UE-2, removes Media-A from UE-1, and updates the Remote Leg using the Remote Leg Update procedure. The UE-1 remains to be the Controller UE and UE-2 remains to be a Controllee UE.
- 4 The SCC AS sends IUT media transfer response to UE-2.

6.1.3.5.1.4 IUT solicited by a target UE without prior information about the existing sessions

This realization of pull mode is particularly applicable to the cases where the UE to be target of an IUT operation does not have information about ongoing sessions, e.g. because of privacy restrictions.

It is based on extending the information provided in the event package used for the discovery of status and capabilities of potential target UEs, with information on the wish to be the target of an IUT operation.

The following information flow shows a UE in control of an IMS session or Collaborative Session, subscribing to a device info event to be notified of availability and capabilities of potential target UEs, this event package being extended with additional information on the wish to be the target of an IUT operation. The end user subsequently requests the transfer of a video to UE-2 by interacting with UE-2. UE-2 then updates its status to inform the network that it solicits an IUT to be performed to itself. In this example, the notification includes the type of media that UE-2 expects to be transferred. Alternatively, any other kind of IUT could be requested the same way, e.g. transfer of Collaborative Session control.



**Figure 6.1.3.5.1.4-1: IUT solicited by a target UE without prior information about existing sessions**

1. An IMS session or a Collaborative Session is set-up, involving at least UE-1 and a remote party. In case of a Collaborative Session, UE-1 is the Controller UE. Two media are established: audio (Media Flow-A) and video (Media Flow-B).
2. UE-1 performs IUT target discovery and discovers UE-2 as specified in TS 23.237 [2], clause 6a.8.
3. By interacting with UE-2, the user requests the transfer of a video media to UE-2.
4. UE-2 updates its status, indicating that it solicits an IUT of a video media.
- 5 - 6. This status update is notified to UE-1.

7. UE-1 identifies that it controls Media Flow-B which corresponds to the solicitation (video) and decides whether to initiate the IUT solicited by UE-2 or not.
8. UE-1 uses the relevant IUT procedure to transfer Media Flow-B to UE-2.

6.1.3.5.2 Controller UE and Controllee UE belong to different IMS subscriptions

6.1.3.5.2.1 Establish Collaborative Session by target UE initiated transferring media

The information flow below illustrates a transfer of media flow scenario in which a UE belonging to one subscription (UE-2) requests a media flow from a UE that belongs to another subscription (UE-1). At this time, the control of the transferred media flow remains at UE-1. After the transfer, a Collaborative Session is established, in which the UE-1 is Controller UE, and UE-2 is Controllee UE. It is assumed that, prior to the scenario, User-2 has discovered that there is an ongoing session between UE-1 and the remote party.

NOTE: If UE-1 does not support IUT media related procedures or is not an IUT subscriber, SCC AS-1 or UE-1 will return an error.

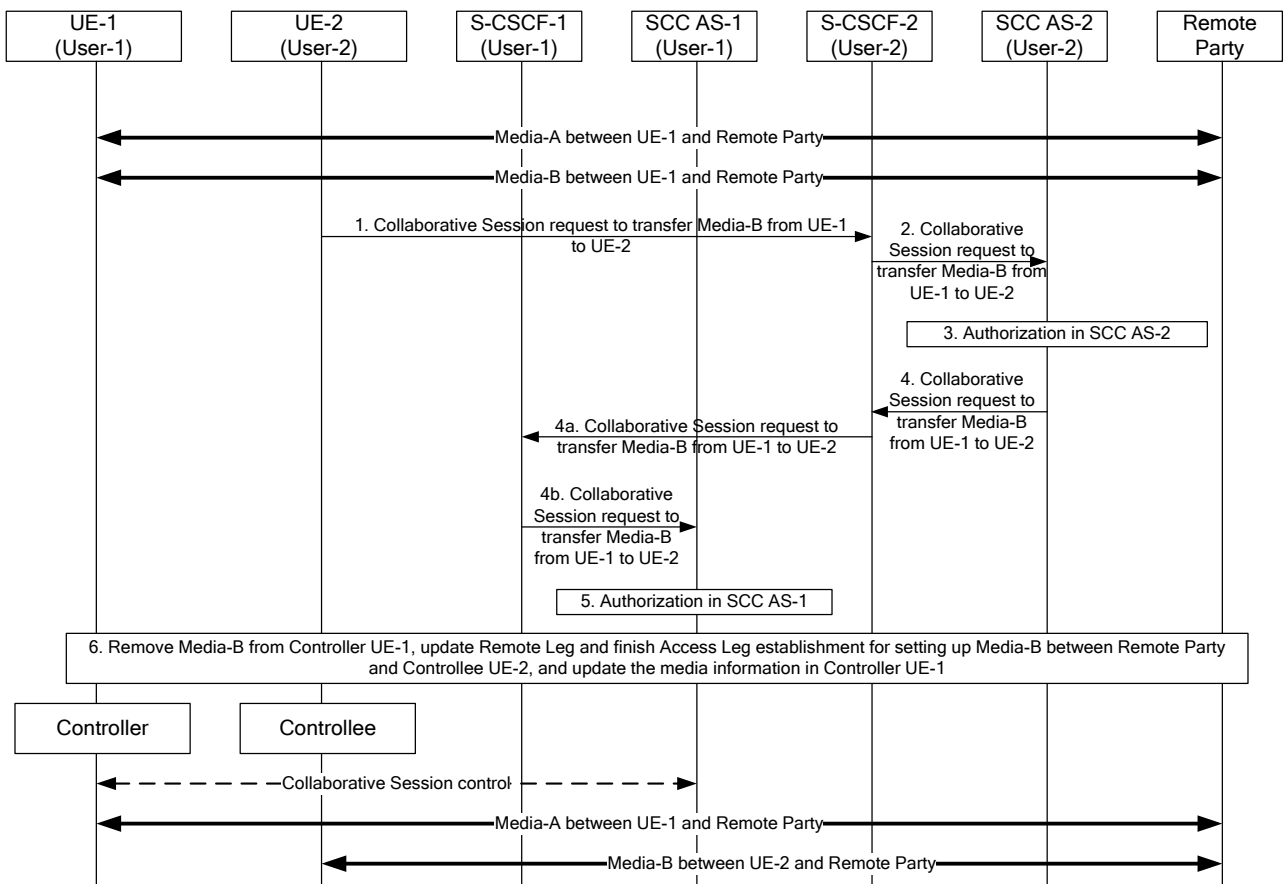


Figure 6.1.3.5.2.1-1: Establish Collaborative Session by target UE initiated transferring media

There are Media-A and Media-B between UE-1 and remote party.

1. UE-2 sends a request towards UE-1 to transfer Media-B from UE-1 to UE-2. The request includes enough information for the network to:
  - identify that the media flow to be transferred is Media-B;
  - identify that the source of the media flow to be transferred is UE-1;
  - identify the session that contains the media flow to be transferred;
  - identify that the target of the transferred media flow is UE-2;
  - give control of the Collaborative Session to UE-1.

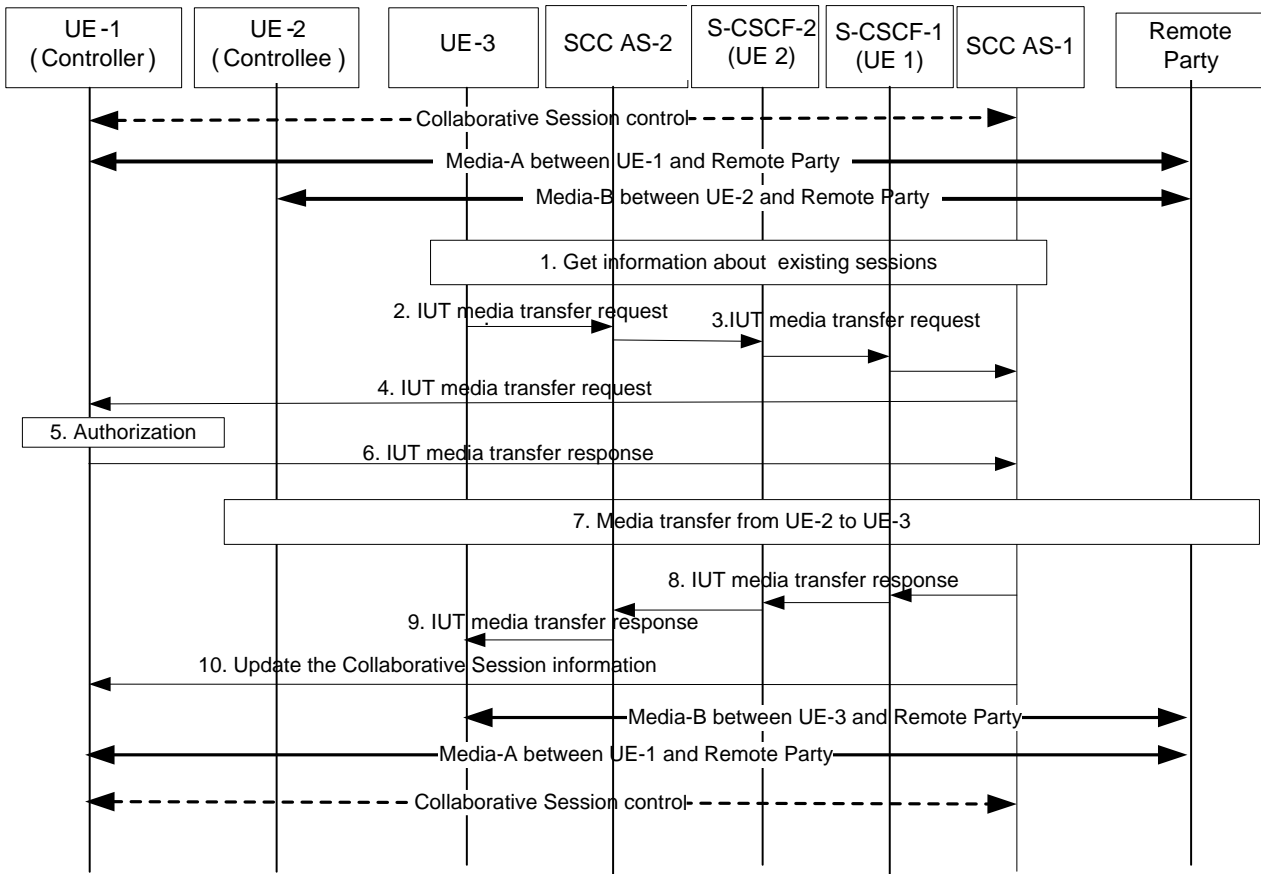
2. S-CSCF-2 forwards the request to SCC AS-2.
3. SCC AS-2 authorizes the request from UE-2.
4. SCC AS-2 sends a request to S-CSCF-2 towards UE-1 to transfer Media-B from UE-1 to UE-2. The Collaborative Session request includes enough information for the network to:
  - identify the source of the transfer request as UE-2;
  - identify that the media flow to be transferred is Media-B;
  - identify that the target of the transferred media flow is UE-2;
  - give control of the Collaborative Session to Controller UE-1.
- 4a. S-CSCF-2 forwards the request towards UE-1.
- 4b. S-CSCF-1 forwards the request to SCC AS-1.
5. SCC AS-1 authorizes the request from UE-2.
6. SCC AS-1 removes Media-B from UE-1, updates Remote Leg and finishes Access Leg establishment for setting up Media-B between remote party and UE-2, and updates the media information in Controller UE-1.

After the above operation, a Collaborative Session is established, for which UE-1 becomes the Controller UE and UE-2 becomes a Controllee UE and Media Flow-A and Media Flow-B become part of the Collaborative Session under the control of UE-1.

This information flow is also applicable to the cases where a UE not participating in an ongoing Collaborative Session joins the Collaborative Session by initiating the transfer of media flow(s) from Controller UE which belongs to the different IMS subscription to itself.

#### 6.1.3.5.2.2 Initiated by UE not participating in ongoing Collaborative Session - media on Controllee UE

UE-1 and UE-2 are involved in Collaborative Session with remote party. UE-1 and UE-2 belong to different subscriptions and SCC AS-1 serves the user of UE-1, SCC AS-2 serves the user of UE-2. UE-3 which is not in the Collaborative Session can belong to the same subscription as UE-1 or UE-2 or neither. The figure below shows the media flow transfer procedure from UE-2 to UE-3 requested by UE-3. For simplification, in the flow UE-3 belongs to the same subscription with UE-2.



**Figure 6.1.3.5.2.2-1: Pull mode Inter UE Transfer initiated by UE not participating in the Collaborative Session – media on the Controllee UE**

1. UE-3 obtains information about the existing sessions and their media flows of UE-2.
  2. UE-3 sends an IUT media transfer request towards UE-2 to transfer the Media-B from UE-2 to UE-3. The request shall include the enough information for the network to:
    - identify the targeted Collaborative Session;
    - identify that the transferred media flow is Media-B;
    - identify that the target of the transferred media flow is UE-3;
    - other information.
  3. Based on the identifier of the targeted Collaborative Session, SCC AS-2 knows itself to be the SCC AS serving the Controllee UE of the collaborative session, and relays the media transfer request via S-CSCF2/1 to the SCC AS-1 which serves the Controller UE of the collaborative session.
  - 4-6. SCC AS-1 sends a media transfer request to the Controller UE-1, and the Controller UE-1 authorizes the media transfer request. If SCC AS-1 is configured to authorize the request on behalf of UE-1, steps 4-6 are skipped.
  7. After obtaining authorization, SCC AS-1 establishes a session with UE-3 for the Media-B, removes Media-B from UE-2, and updates the Remote Leg using the Remote Leg Update procedure as specified in clause 6a.1.2 in TS 23.237 [2]. The UE-3 becomes a new Controllee UE.
- NOTE 1: If no media flow as part of the Collaborative Session remains in UE-2 after the transfer, UE-2 shall be removed from the Collaborative Session.
8. SCC AS-1 sends the media transfer response via S-CSCF1/2 towards UE-3.
  9. SCC AS-2 sends the media transfer response towards UE-3.

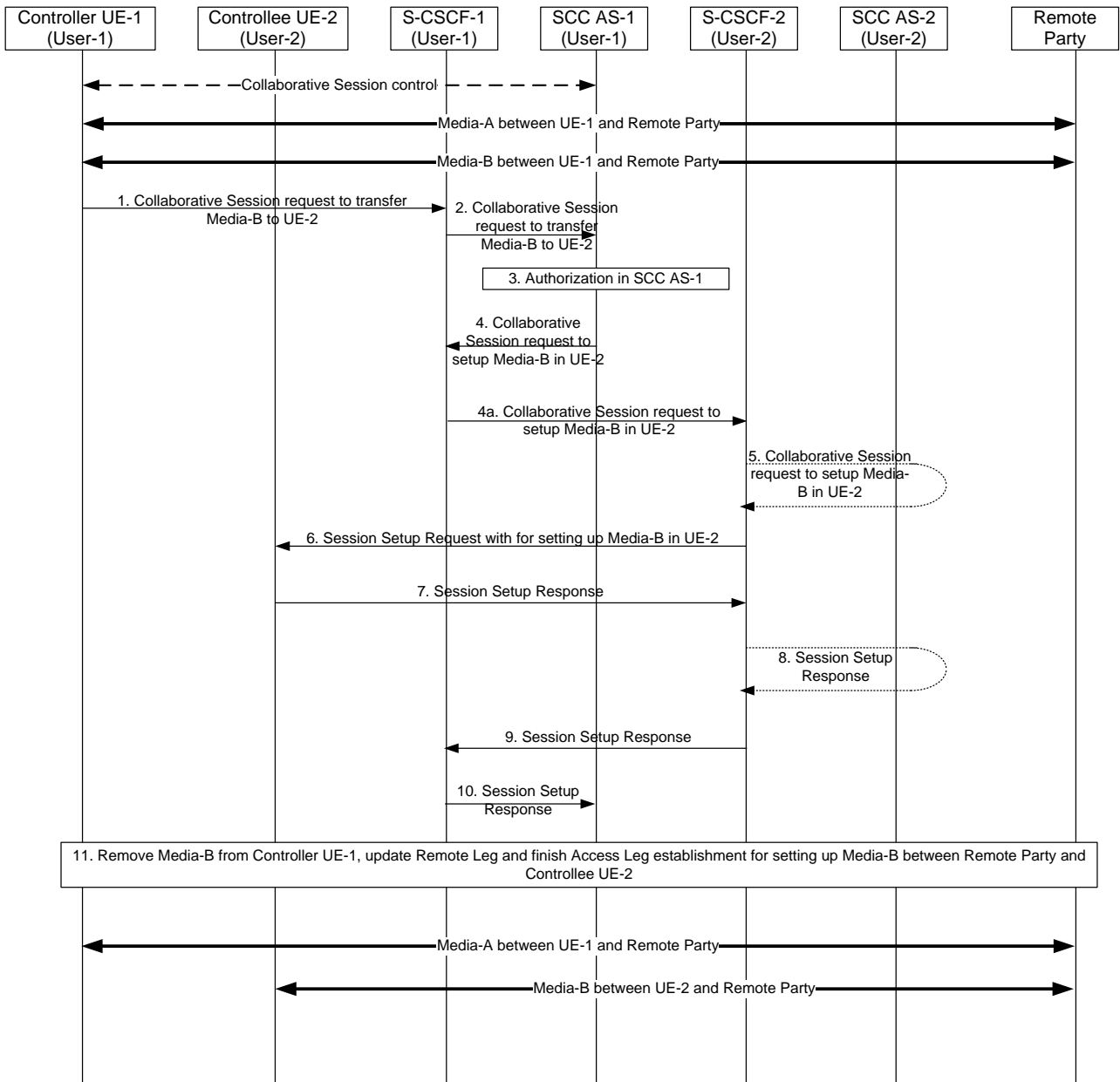
10. SCC AS-1 sends the Collaborative Session information to the Controller UE-1 to inform UE-1 of the change of the Collaborative Session.

NOTE 2: If the Controller UE-1 and the Controllee UE-2 belong to the same subscription, SCC AS-1 and SCC AS-2 are the same SCC AS.

### 6.1.3.6 Media flow transfer initiated by UE other than the target UE

#### 6.1.3.6.1 Transferring media from Controller UE to Controllee UE belonging to different IMS subscription

The information flow below illustrates a transfer of media flow scenario in which the Controller UE transfers a flow to a UE that belongs to another user.



**Figure 6.1.3.6.1-1: Transferring media from Controller UE to Controllee UE belonging to different IMS subscriptions**

There are Media-A and Media-B between Controller UE-1 and remote party.

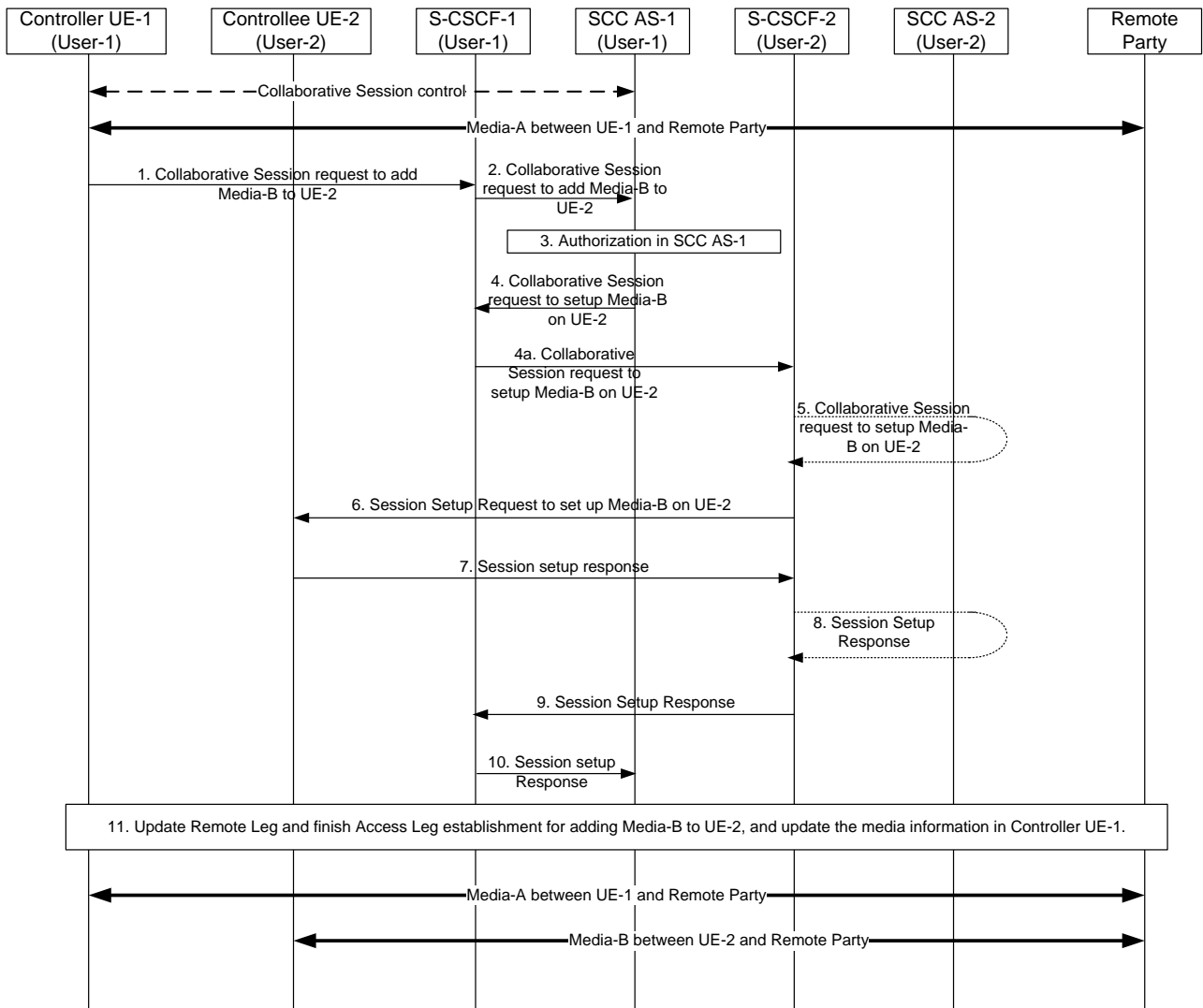
1. UE-1 sends a request towards SCC AS-1 to transfer Media-B to UE-2. The request includes enough information for the network to:

- identify that the media flow to be transferred is Media-B;
  - identify that the source of the media flow to be transferred is UE-1;
  - identify that the target of the transferred media flow is UE-2.
2. S-CSCF-1 forwards the request to SCC AS-1.
  3. SCC AS-1 authorizes the request from UE-1.
  4. SCC AS-1 sends a request towards UE-2 to setup Media-B on UE-2. The request includes enough information for the network to:
    - identify the source of the transfer request as UE-1;
    - identify the remote party;
    - identify that the media flow to be transferred is Media-B;
    - identify that the source of the media flow to be transferred is Controller UE-1;
    - identify that the target of the media flow to be transferred is Controllee UE-2.
  - 4a. S-CSCF-1 forwards the request towards UE-2.
  5. If UE-2 is an IUT subscriber, the request is routed via SCC AS-2 which checks that UE-2 is authorized to receive the request. If so, SCC AS-2 notes that this request relates to the establishment of a Collaborative Session so that any requests by UE-2 related to this Collaborative Session will be forwarded back towards SCC AS-1. A Session Setup request is then routed on towards UE-2. If UE-2 is not an IUT subscriber, S-CSCF-2 routes the request according to normal procedures.
  6. S-CSCF-2 forwards the Session Setup request to Controllee UE-2.
  7. UE-2 sends a Session Setup response towards SCC AS-1.
  - 8- 9. S-CSCF-2 routes the response back towards SCC AS-1 – via SCC AS-2 if UE-2 is an IUT subscriber.
  10. S-CSCF-1 forwards the session setup response to SCC AS-1.
  11. SCC AS-1 removes Media-B from UE-1, updates Remote Leg and finishes Access Leg establishment for setting up Media-B between remote party and UE-2.

After the above operation, Media-B has been transferred from Controller UE-1 to Controllee UE-2.

#### 6.1.3.6.2 Adding media from Controller UE to Controllee UE belonging to different IMS subscription

The information flow below illustrates a scenario in which UE-1, the Controller UE of a Collaborative Session, invites a UE that belongs to a second user to participate in the Collaborative Session by adding a new media flow towards it; control of the Collaborative Session remains with UE-1.



**Figure 6.1.3.6.2-1: Adding media by Controller UE to Controllee UE belonging to different IMS subscription**

There is Media-A between Controller UE-1 and remote party.

1. Controller UE-1 sends a request towards SCC AS-1 to add Media-B on UE-2, as part of the same Collaborative Session of Media-A. The request includes enough information for the network to:
  - identify that the added media flow is Media-B and the requested media type associated with Media-B (e.g., video);
  - identify that the target of the added media flow is UE-2.
2. S-CSCF-1 forwards the request to SCC AS-1.
3. SCC AS-1 authorizes the request from UE-1.
4. SCC AS-1 sends a request towards UE-2 for adding Media-B to Controllee UE-2. The request includes enough information for the network to:
  - identify the source of the request as UE-1;
  - identify the remote party;
  - identify that the added media flow is Media-B and the media type associated with Media-B (e.g., video);
  - identify that the source of the added media flow is Controller UE-1;



- identify that the target of the added media flow is Controllee UE-2.
- 4a. S-CSCF-1 forwards the request towards UE-2.
- 5. If UE-2 is an IUT subscriber, the request is routed via SCC AS-2 which authorizes the request. SCC AS-2 notes that this request relates to the establishment of a Collaborative Session so that any requests by UE-2 related to this Collaborative Session will be forwarded back towards SCC AS-1. A Session Setup Request is then routed on towards UE-2. If UE-2 is not an IUT subscriber, S-CSCF-2 routes the request according to normal procedures.
- 6. S-CSCF-2 forwards the Session Setup request towards UE-2.
- 7. UE-2 sends a Session Setup response towards SCC AS-1. This request contains the full media description of Media-B.
- 8- 9. S-CSCF-2 routes the response back towards SCC AS-1 via SCC AS-2 if UE-2 is an IUT subscriber.
- 10. S-CSCF-1 forwards the Session Setup response to SCC AS-1.
- 11. SCC AS-1 updates Remote Leg and finishes Access Leg establishment for adding Media-B to UE-2, and updates the media information in Controller UE-1.

After the above operation, Media-B is established between Controllee UE-2 and remote party.

### 6.1.3.6.3 Controllee initiated Transfer of media from Controllee UE to another Controllee UE (Controller, Controllee-1 and Controllee-2 belong to different IMS subscriptions)

This information flow shows the Controllee UE-2 transferring a media flow from the Controllee (UE-2) to another Controllee (UE-2). As a pre-requisite, there exists a Collaborative Session with a media flows, Media-B on the Controllee UE (UE-2). Furthermore, Controller UE and Controllee UE 1 profiles are served by different IUT SCC AS, SCC AS 1, SCC AS 2 which are in turn attached to S-CSCF 1, S-CSCF 2 respectively. For simplicity, the S-CSCFs are not shown in the following figure.

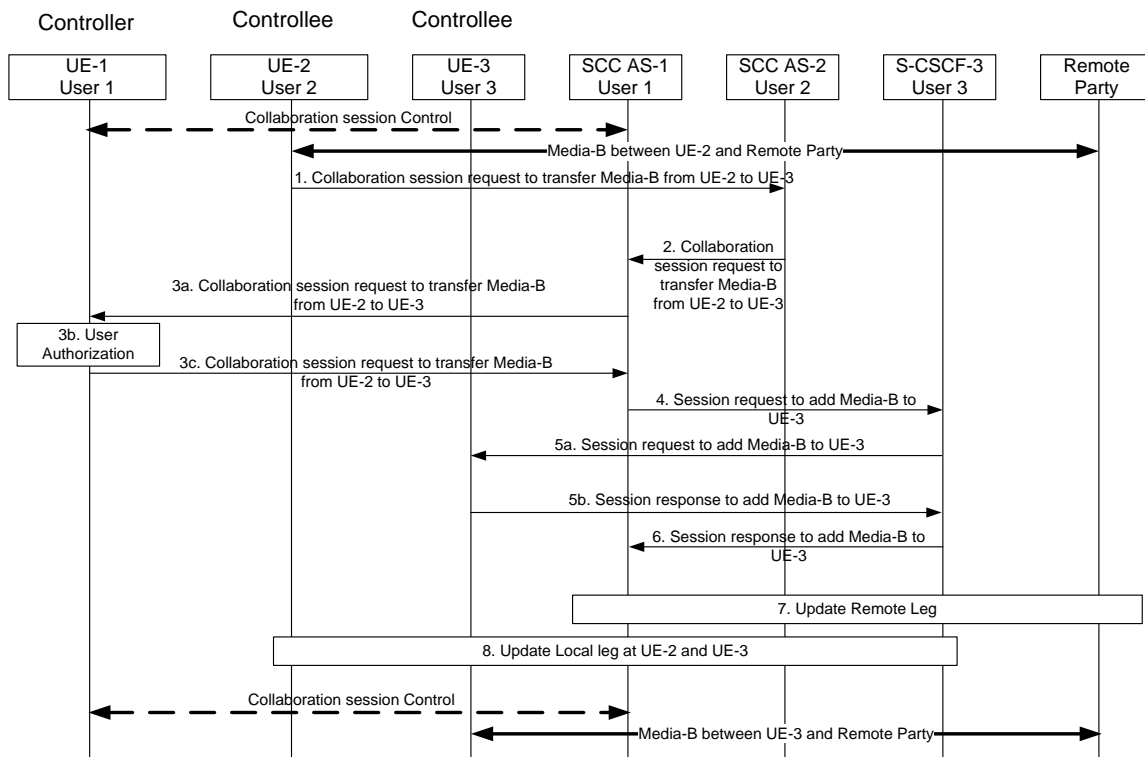


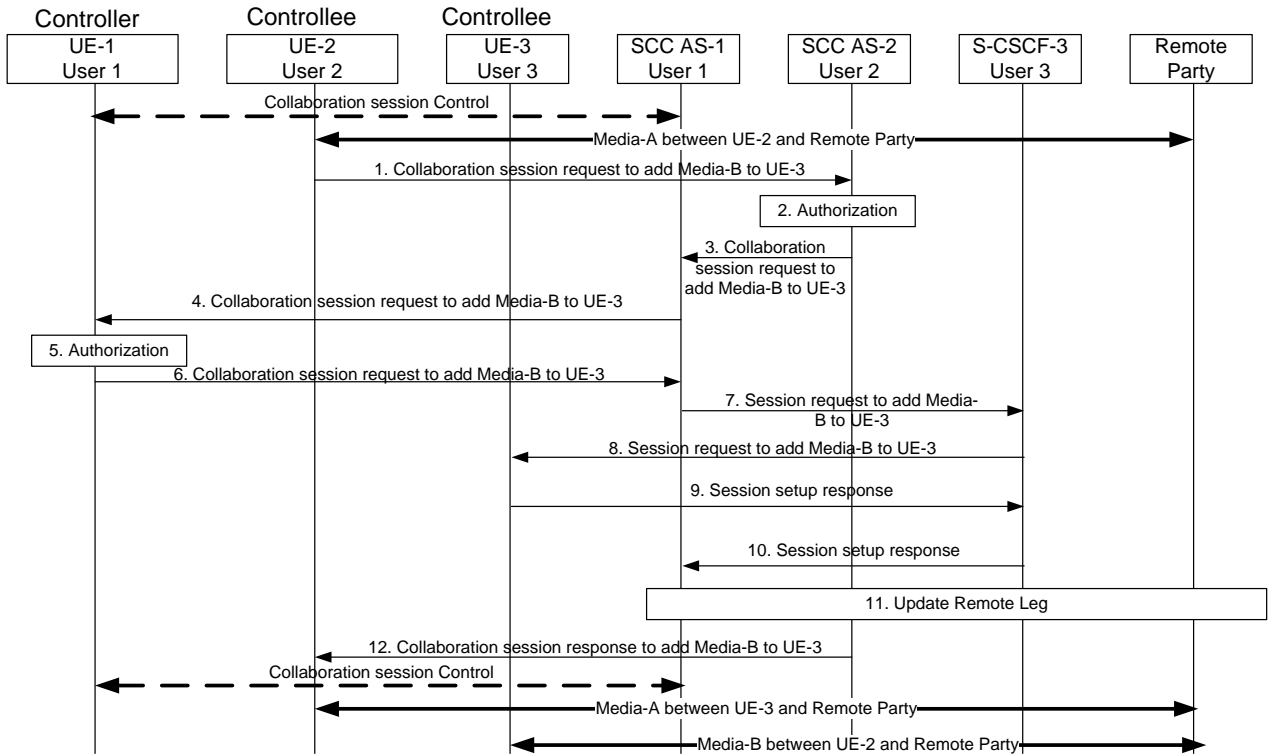
Figure 6.1.3.6.3 -1: Controllee initiated Transfer of media from Controllee UE to another Controllee UE (Controller and Controllees belong to different IMS subscriptions)

1. Controllee UE-2 sends a Collaborative session request to SCC AS-2 to transfer Media-B from UE-2 to Controllee UE-3. The Collaborative Session request includes enough information for the network to:
    - identify that the media to be transferred is Media-B;
    - identify that the source for the media to be transferred is Controllee UE-2;
    - identify that the target for the media to be transferred is Controllee UE-3;
    - identify the session that contains of the media flow to be transferred;
    - Controller of the Collaborative Session is Controller UE-1.
  2. SCC AS-2 authorizes the request from UE-2 and identifies that the session is a collaborative session anchored at SCC AS1 and so forwards the "Collaborative session request to transfer Media-B" to SCC AS-1 which is the SCC AS for the Controller UE.
  - 3a-c The SCC AS-1 sends a Collaborative session request to the Controller UE-1, and the Controller UE-1 authorizes the media transfer request.
- NOTE: SCC AS-1 may be configured to authorize the request on behalf of UE-1.
4. SCC AS-1 sends the Session request to add media-B to UE-3 via S-CSCF-3. Media-B in UE-3 is kept inactive until the remote end is updated. The Collaborative Session request includes enough information for the network to:
    - identify the source of the transfer request as UE-1;
    - identify the remote party;
    - identify that the media flow to be transferred is Media-B;
    - identify that the source of the media flow to be transferred is Controllee UE-2;
    - identify that the target of the media flow to be transferred is Controllee UE-3;
  - 5a. S-CSCF-3 forwards the Session request to UE-3.
  - 5b. UE-3 sends a Session response to S-CSCF-3.
  6. S-CSCF-3 forwards Session response to SCC AS-1.
  7. SCC AS-1 updates remote leg with Remote Leg Update Procedure.
  8. SCC AS-1 activates media-B at UE-2 and releases media-B UE-3.

When the Inter UE Transfer is completed UE-1 keeps the Collaborative Session control.

#### 6.1.3.6.4 Controllee initiated Addition of media to another Controllee UE (Controller, Controllee-1 and Controllee-2 belong to different IMS subscriptions)

This information flow shows the Controllee UE-2 adding a media flow to another Controllee (UE-3). As a pre-requisite, there exists a Collaborative Session with a media flow, Media-A, on the Controllee UE (UE-2). Furthermore, Controller UE 1 and Controllee UE-2 profiles are served by different IUT SCC AS: SCC AS 1 and SCC AS 2, which are in turn attached to S-CSCF 1 and S-CSCF 2 respectively. For simplicity, these S-CSCFs are not shown in the following figure.



**Figure 6.1.3.6.4-1: Controllee initiated addition of media to another Controllee UE (Controller and Controllees belong to different IMS subscriptions)**

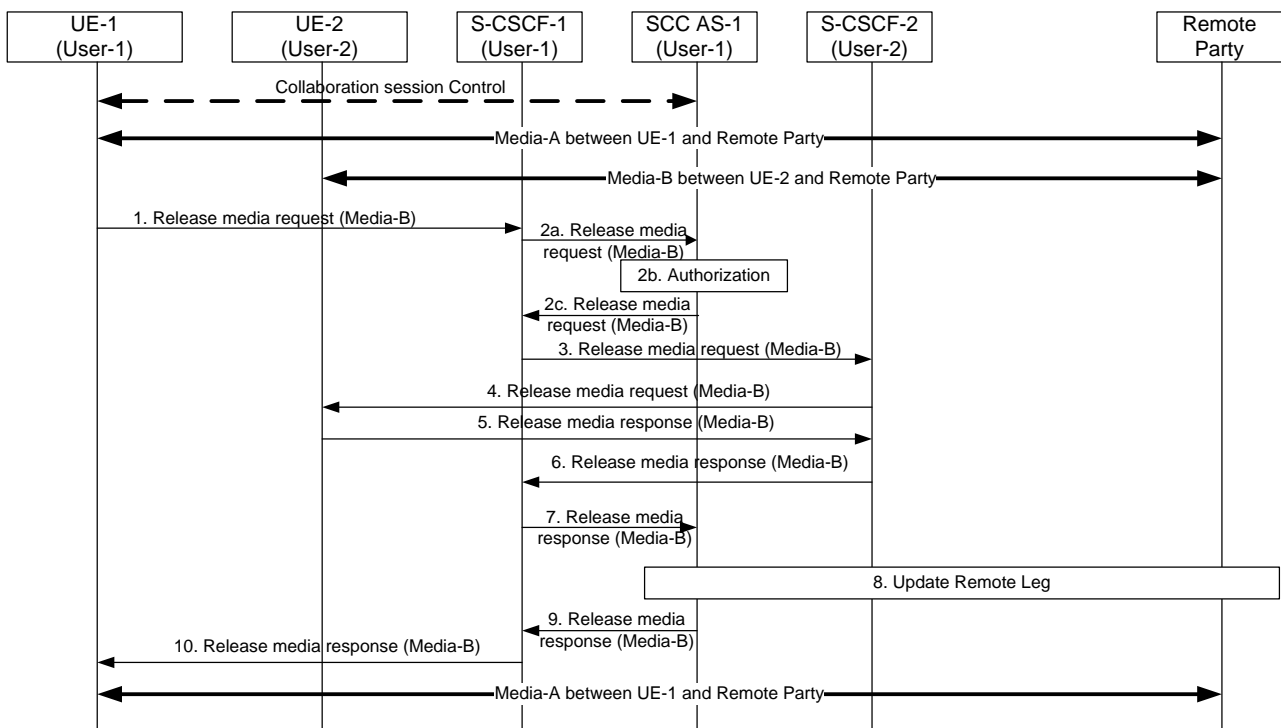
1. Controllee UE-2 sends a Collaborative session request to SCC AS-2 to add Media-B to Controllee UE-3. The Collaborative Session request includes enough information for the network to:
    - identify that the media to be added is Media-B;
    - identify that the target for the media to be added to is Controllee UE-3;
    - identify the session that contains of the media flow to be added;
    - Controller of the Collaborative Session is Controller UE-1.
  2. SCC AS-2 authorizes the request from UE-2 and identifies that the session is a collaborative session anchored at SCC AS-1.
  3. SCC AS-2 then forwards the Collaborative session request to SCC AS-1 to transfer Media-B to SCC AS-1 which is the SCC AS for the Controller UE.
  - 4-6 SCC AS-1 sends a Collaborative session request to the Controller UE-1, and the Controller UE-1 authorizes the media addition request.
- NOTE: SCC AS-1 may be configured to authorize the request on behalf of UE-1.
7. SCC AS-1 sends Session request to add media-B to UE-3 via S-CSCF-3. The Collaborative Session request includes enough information for the network to:
    - identify the source of the transfer request as UE-1;
    - identify the remote party;
    - identify that the media flow to be added is Media-B;
    - identify that the target of the media flow to be added is Controllee UE-3;
  8. S-CSCF-3 forwards the Session request to UE-3.

9. UE-3 sends a Session response to SCC AS-3.
10. S-CSCF-3 forwards Session response to SCC AS-1.
11. SCC AS-1 updates remote leg with Remote Leg Update Procedure.
12. SCC AS-2 sends the Collaborative session response to UE-2.

When the Inter UE Transfer is completed UE-1 keeps the Collaborative Session control.

### 6.1.3.6.5 Controller initiated Release of media from Controllee UE (Controller and Controllee belong to different IMS subscriptions)

This information flow shows the Controller UE releasing a media flow from the Controllee UE. As a pre-requisite, there exists a Collaborative Session with two media flows, Media-A on the Controller UE (UE-1) and Media-B on the Controllee UE (UE-2). Furthermore, Controller UE and Controllee UE profiles are stored on different S-CSCFs, S-CSCF-1 and S-CSCF-2, respectively.



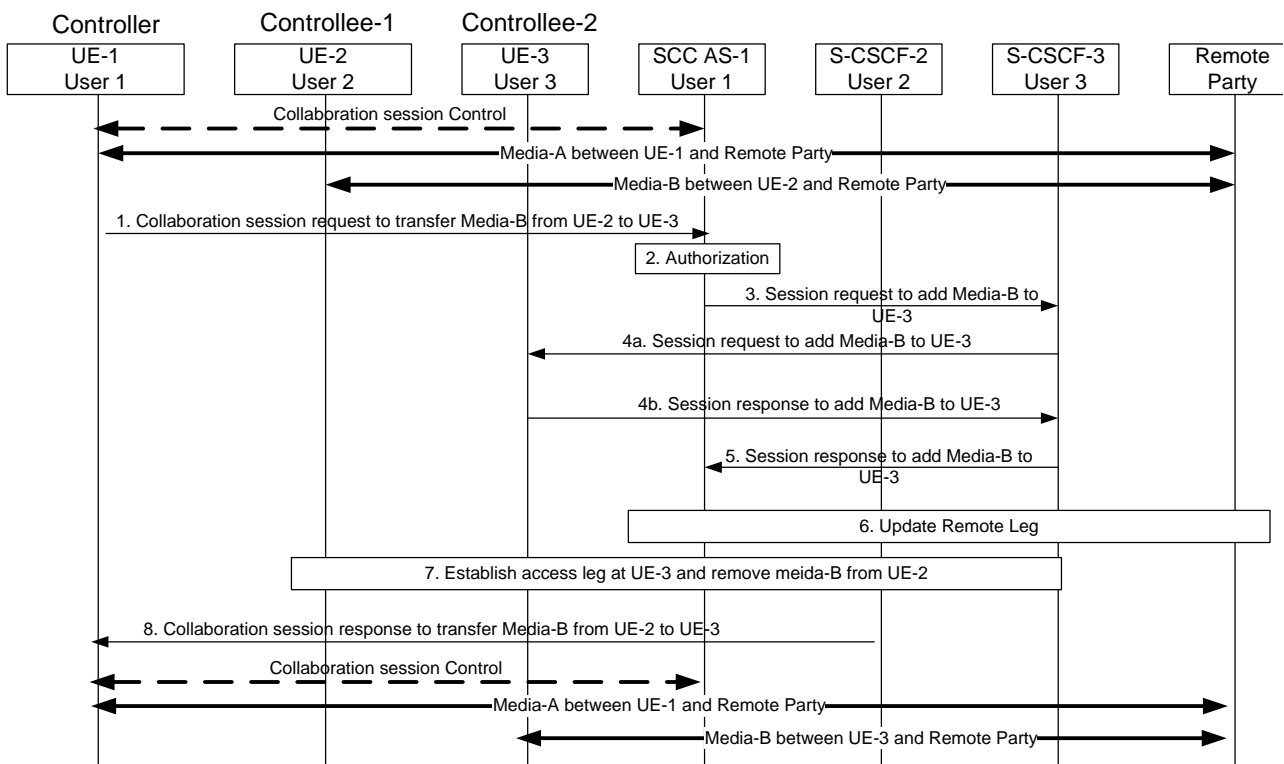
**Figure 6.1.3.6.5-1: Controller initiated Release of media from Controllee UE (Controller and Controllee belong to different IMS subscriptions)**

1. Controller UE-1 sends a Release media request to SCC AS-1 to release Media-B on Controllee UE-2. The Collaborative Session request includes enough information for the network to:
  - identify that the media to be released is Media-B;
  - identify that the media to be held is on Controllee UE-2;
  - identify the session that contains of the media flow to be released;
  - keep the control of the Collaborative Session in Controller UE-1.
- 2a. S-CSCF-1 forwards the Release Media request to SCC AS-1.
- 2b. SCC AS-1 verifies that UE-1 is a Controller and therefore is authorized to release the media from a Controllee UE with a user belonging to another subscription.

- 2c. SCC AS-1 sends a Release Media request towards UE-2 to release Media-B on UE-2. The Collaborative Session request includes enough information for the network to:
  - identify the source of the release media request as UE-1;
  - identify that the media flow to be released is Media-B;
  - identify that the source of the media flow to be released is Controllee UE-2;
- 3. S-CSCF-1 forwards the Release Media request towards S-CSCF-2.
- 4. S-CSCF-2 forwards the Release Media Request towards the Controllee.
- 5. Controllee UE-2 provides the Release Media Response to the S-CSCF-2.
- 6-7. S-CSCF-2 forwards the Release Media Response to SCC-AS-1.
- 8. The SCC AS-1 updates the remote leg of the collaborative session with Media-B released.
- 9-10. The SCC AS-1 informs the Controller UE-1 via the S-CSCF-1 of successfully releasing Media-B from Controllee UE 2. Steps 9-10 could be performed in parallel to Step 10.

**6.1.3.6.6 Controller initiated Transfer of media from Controllee UE to another Controllee UE (Controller, Controllee-1 and Controllee-2 belong to different IMS subscriptions)**

This information flow shows the Controller UE transferring a media flow from the Controllee (UE-2) to another Controllee (UE-3). As a pre-requisite, there exists a Collaborative Session with two media flows, Media-A on the Controller UE (UE-1) and Media-B on the Controllee UE (UE-2). Furthermore, Controller UE, Controllee UE-2 and Controllee UE-3 profiles are served by different S-CSCFs, S-CSCF-1, S-CSCF-2 and S-CSCF-3, respectively. For simplicity, S-CSCF-1 is not shown in the following figure.



**Figure 6.1.3.6.6-1: Controller initiated Transfer of media from Controllee UE (Controller and Controllee belong to different IMS subscriptions)**

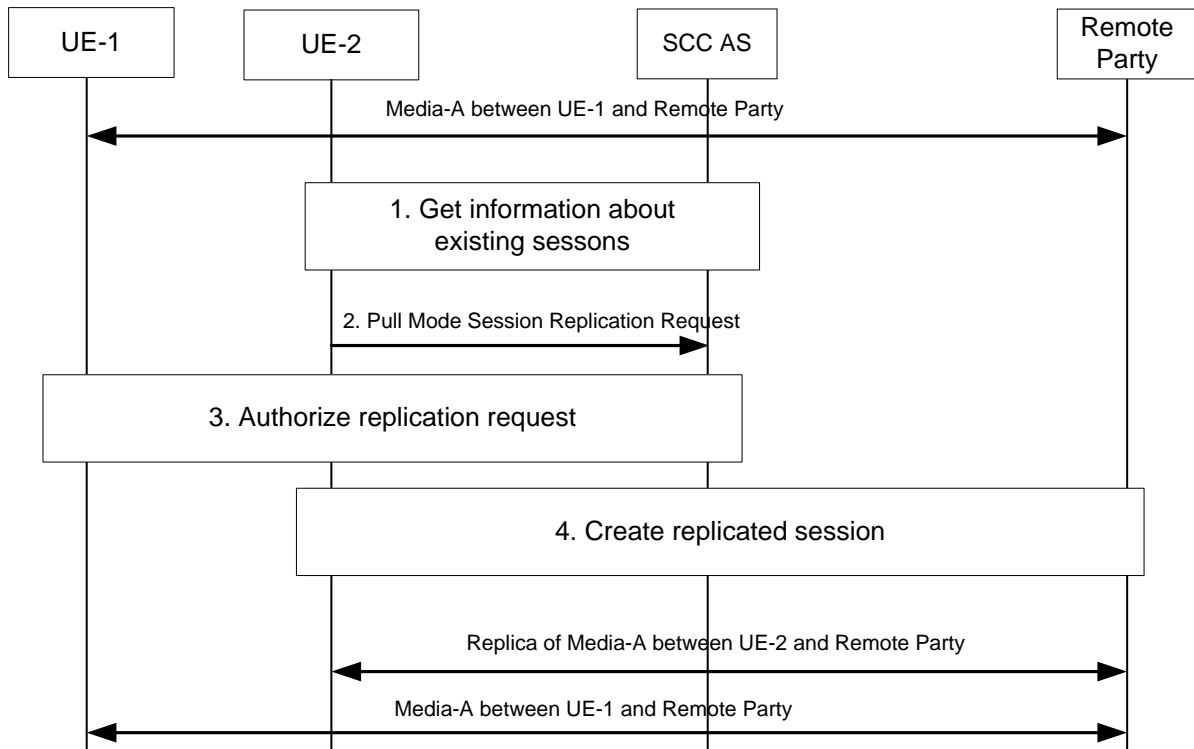
1. Controller UE-1 sends a Collaboration session request to SCC AS-1 to transfer Media-B from Controllee UE-2 to Controllee UE-3. The Collaborative Session request includes enough information for the network to:
  - identify that the media to be transferred is Media-B;
  - identify that the media to be transferred is currently on Controllee UE-2;
  - identify that the media to be transferred to is Controllee UE-3;
  - identify the session that contains of the transferred media flow to be transferred;
  - keep the control of the Collaborative Session in Controller UE-1.
2. SCC AS-1 verifies that UE-1 is a Controller and therefore is authorized to release the media from a Controllee UE with a user belonging to another subscription.
3. SCC AS-1 sends Session request to add media-B to UE-3 via S-CSCF-3. Media-B in UE-3 is kept inactive until the remote end is updated. The Session request includes enough information for the network to:
  - identify the source of the transfer request as UE-1;
  - identify the remote party;
  - identify that the media flow to be added is Media-B;
  - identify that the source of the media flow to be transferred is Controllee UE-2;
  - identify that the target of the media flow to be transferred is Controllee UE-3;
- 4a. S-CSCF-3 forwards the Session request to UE-3.
- 4b. UE-3 sends a Session response to S-CSCF-3.
5. S-CSCF-3 forwards Session response to SCC AS-1.
6. SCC AS-1 updates remote leg with Remote Leg Update Procedure.
7. SCC AS-1 establishes the access legs at UE-2 and removes media-B from UE-3.
8. SCC AS-1 sends the Collaboration Session Response message to UE-1 confirming the successful transfer of Media-B from UE-2 to UE-3.

When the Inter UE Transfer is completed, UE-1 keeps the Collaborative Session control.

### 6.1.3.7 Session Replication by remote party

#### 6.1.3.7.1 Pull Mode Session Replication

The call flow in the figure below shows the scenario where UE-2 requests replication of a session ongoing between UE-1 and a remote UE. After the replication procedure is complete, the sessions are independent.



**Figure 6.1.3.7.1-1: Pull mode session replication**

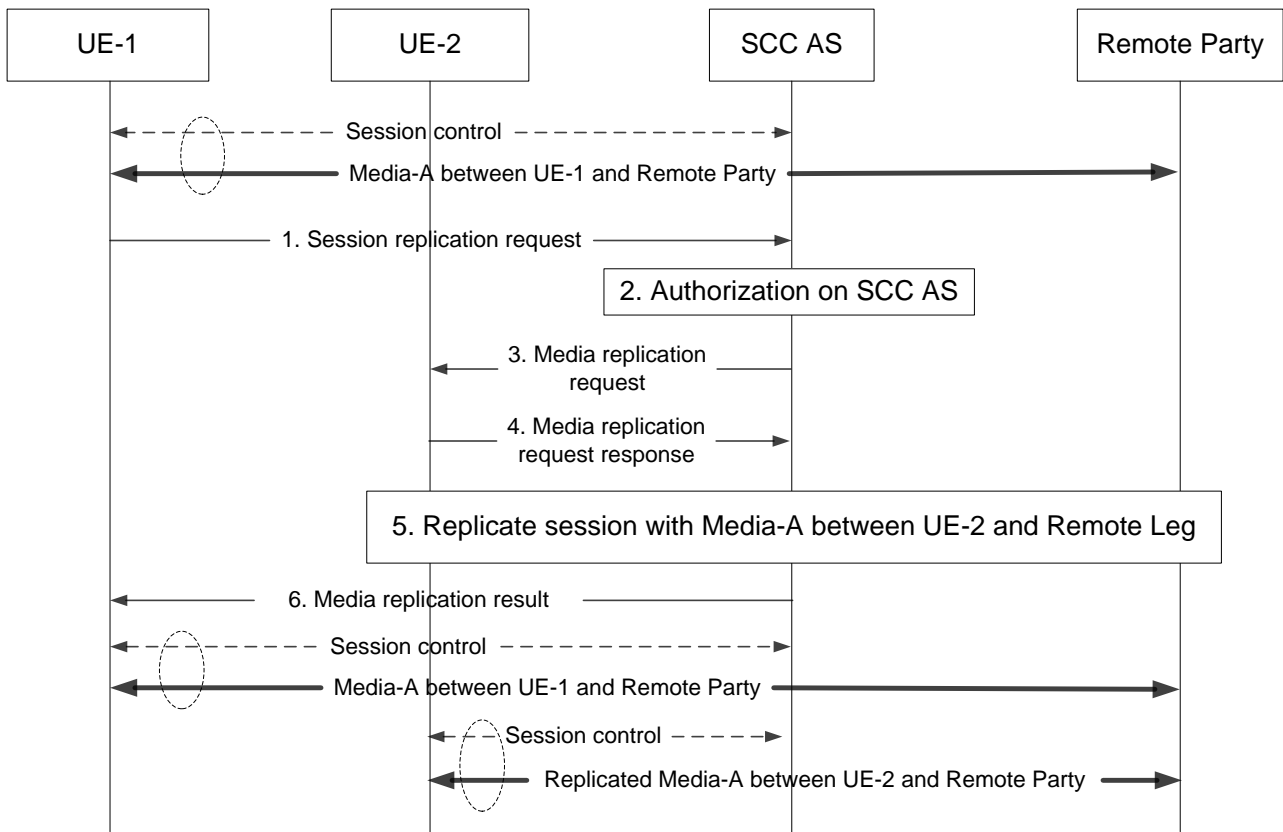
1. UE-2 obtains information about the existing sessions and their media flows.
2. UE-2 uses the session information obtained and to send a session replication request towards the SCC AS. The request indicates that this request is for a session replication request.
3. The SCC AS requests UE-1 to authorize the replication request or the SCC AS authorizes the request on behalf of UE-1 (e.g. pre-configured).
4. If the request is authorized, UE-2 creates a new session with the remote UE. When the new session is established, the state of the original media is replicated e.g. same playback state; same used media etc. is replicated. If the remote party does not support setting up a replicated session, the flow will fail.

NOTE: The session replication data and how it is conveyed from the source UE is not specified in this document.

5. A new session, where the media is a replica of Media-A, is established between UE-2 and the remote UE.

#### 6.1.3.7.2 Push Mode Session Replication (same subscription)

The call flow in the figure below shows the scenario where UE-1 requests replication of a session ongoing between UE-1 and a remote UE to UE-2. After the replication procedure is complete, the sessions are independent. As a pre-requisite, there exists a Session with Media-A on UE-1.



**Figure 6.1.3.7.2-1: Push mode session replication (same subscription)**

1. UE-1 requests to replicate current session to UE-2 by sending Session Replication Request to SCC AS. The Session Replication Request should contain enough information for the SCC AS to:

- identify that the session replication source is UE-1;
- identify that the session replication target is UE-2;
- identify the remote party.

2. SCC AS checks UE-1 is eligible to request session replication for UE under the same subscription.

3. SCC AS sends Session Replication request to controllee UE-2.

3. UE-2 responds to the Session Replication request.

4. UE-2 initiates a new session with the remote UE. When the new session is established, the state of the original media is replicated, e.g., same playback state, same used media, etc. is replicated. If the remote party does not support setting up a replicated session, the flow will fail.

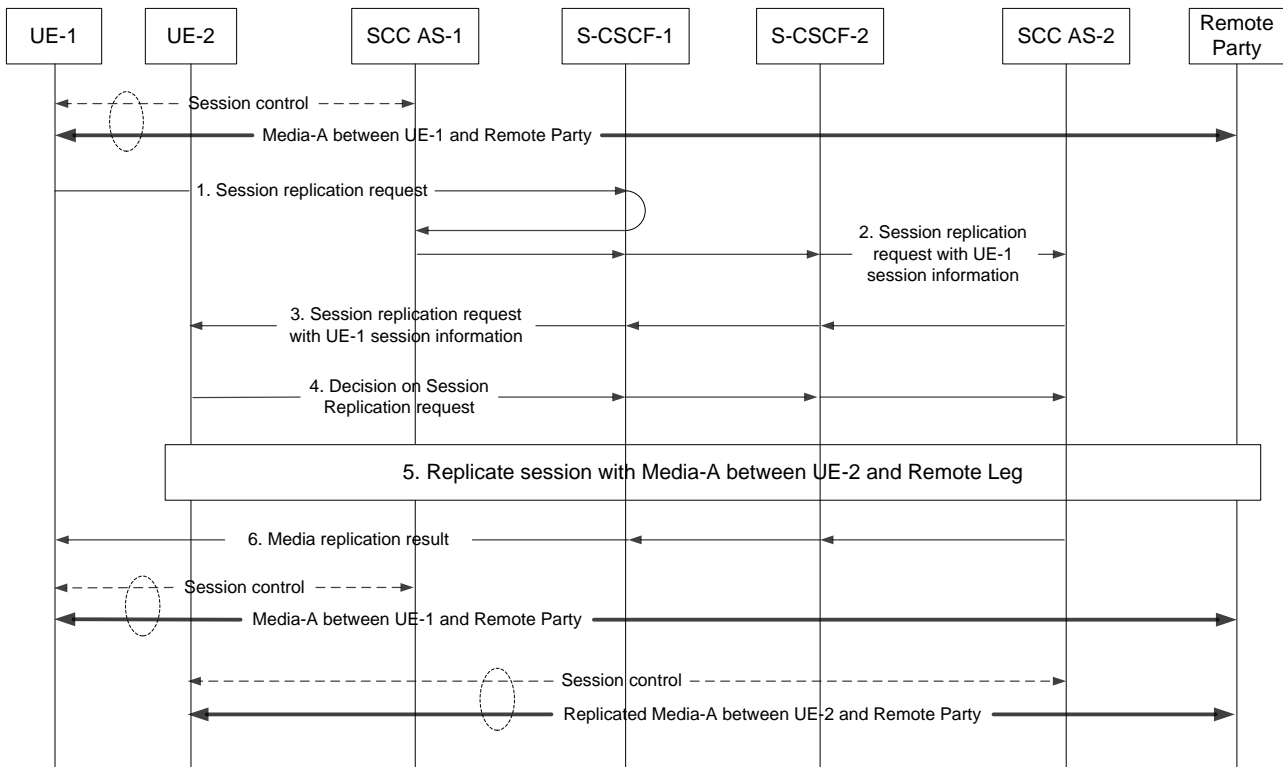
NOTE: The session replication data and how it is conveyed from the source UE is not specified in this document.

5. A new session, where the media are replica of Media-A, is established between UE-2 and the remote UE.

### 6.1.3.7.3 Push Mode Session Replication (different subscription)

The call flow in the figure below shows the scenario where UE-1 requests replication of a session ongoing between UE-1 and a remote UE to UE-2. After the replication procedure is complete, the sessions are independent. As a pre-requisite, there exists a Session Media-A on UE-1.





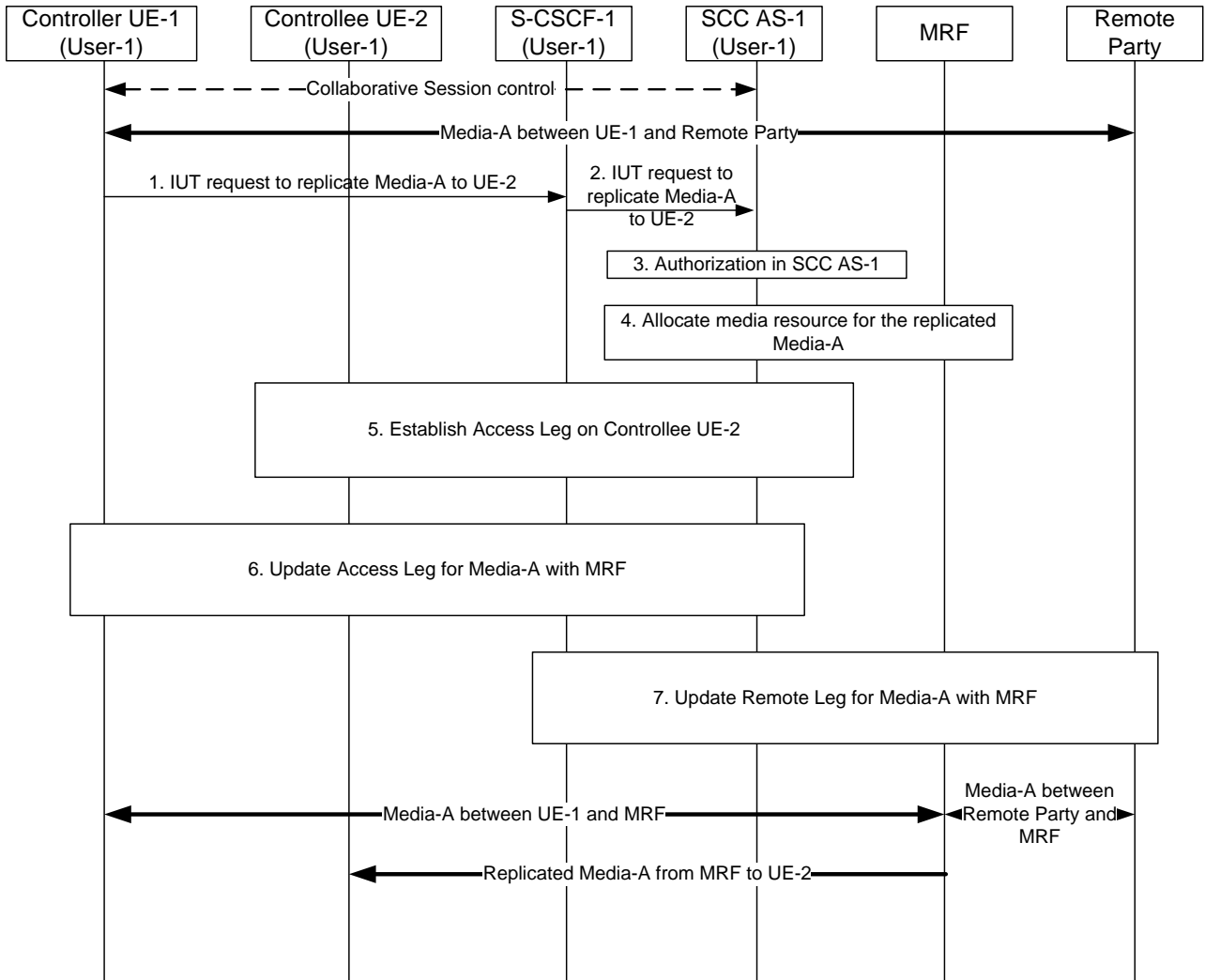
**Figure 6.1.3.7.3-1: Push mode session replication (different subscription)**

1. UE-1 requests to replicate current session to UE-2 by sending Session Replication Request to SCC AS-1. The Session Replication Request should contain enough information for the SCC AS to:
    - identify that the session replication source is UE-1;
    - identify that the session replication target is UE-2;
    - identify the remote party.
  2. SCC AS-1 identify UE-2 is not under the same subscription as UE-1. It forwards the request to S-CSCF-2 that serves UE-2 together with the information of session on UE-1. S-CSCF-2 further forwards the request to SCC AS-2 that serves UE-2.
  3. SCC AS-2 sends Session Replication request together with UE-1 session information to UE-2.
  4. UE-2 decides to accept or reject the Session Replication request.
  5. If the request is accepted by UE-2, UE-2 initiates a new session with the remote UE. When the new session is established, the state of the original media is replicated, e.g., same playback state, same used media, etc. is replicated.
- NOTE 1: If either UE-2 or the remote party does not support setting up a replicated session, the flow will fail.
- NOTE 2: The session replication data and how it is conveyed from the source UE is not specified in this document.
6. SCC AS-2 sends Media Replication result to UE-1. A new session, where the media are replica of Media-A, is established between UE-2 and the remote UE.

6.1.3.8 Media Flow Replication by network

6.1.3.8.1 Replicating media in network from Controller UE to another UE belonging to same IMS subscription

The information flow below illustrates a scenario in which the Controller UE of a Collaborative Session requests that the network replicate a media flow towards another UE that belongs to the same subscription.



**Figure 6.1.3.8.1-1: Replicating media in network from Controller UE to another UE belonging to same IMS subscription**

There is Media-A between Controller UE-1 and remote party.

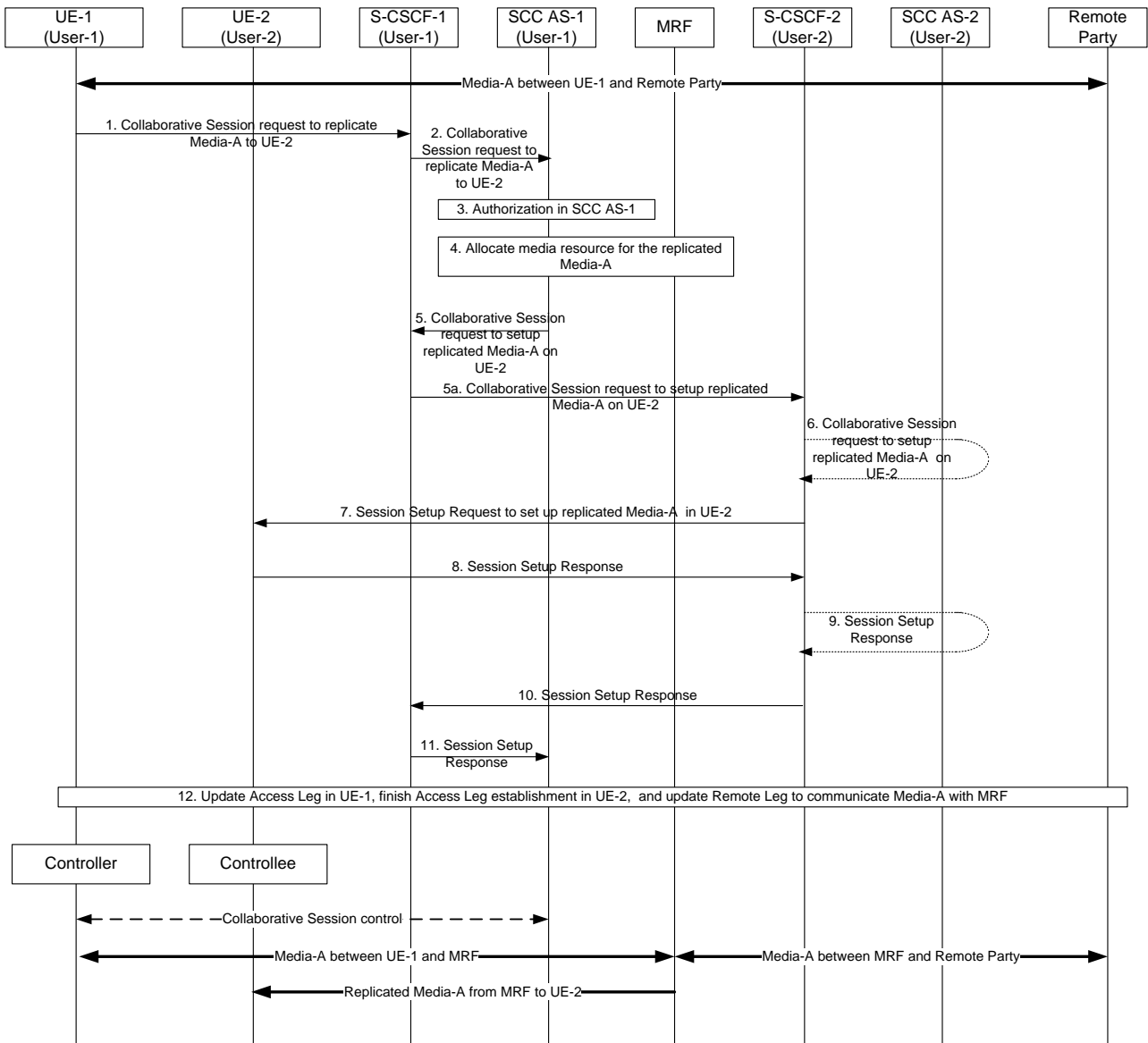
1. Controller UE-1 sends a request towards SCC AS-1 to replicate Media-A to UE-2. The session setup request includes enough information for the network to:
  - identify that the media flow to be replicated is Media-A;
  - identify that the source of the media flow to be replicated is the remote party;
  - identify that the target of the media flow to be replicated is Controllee UE-2.
2. S-CSCF-1 forwards the request to SCC AS-1.
3. SCC AS-1 authorizes the request from UE-1.
4. SCC AS-1 allocates media resource in MRF for the Media-A to be replicated.
5. SCC AS-1 sends a request to establish an Access Leg at UE-2 for Media-A.

6. SCC AS-1 updates the Access Leg on Controller UE-1 for the replicated media flow (Media-A) with MRF.
7. SCC AS-1 updates the Remote Leg to communicate Media-A with MRF.

After the above operation, Media-A is established between Controller UE-1 and MRF, between Controller UE-2 and MRF, and between remote party and MRF.

### 6.1.3.8.2 Replicating media in network from Controller UE to another UE belonging to different IMS subscription

The information flow below illustrates a scenario in which a Collaborative Session is established in the context of an ongoing IMS session. The Controller UE requests that the network replicate a media flow towards a UE that belongs to a different subscription.



**Figure 6.1.3.8.2-1: Replicating media in network from Controller UE to another UE belonging to different IMS subscription**

There is Media-A between Controller UE-1 and remote party.

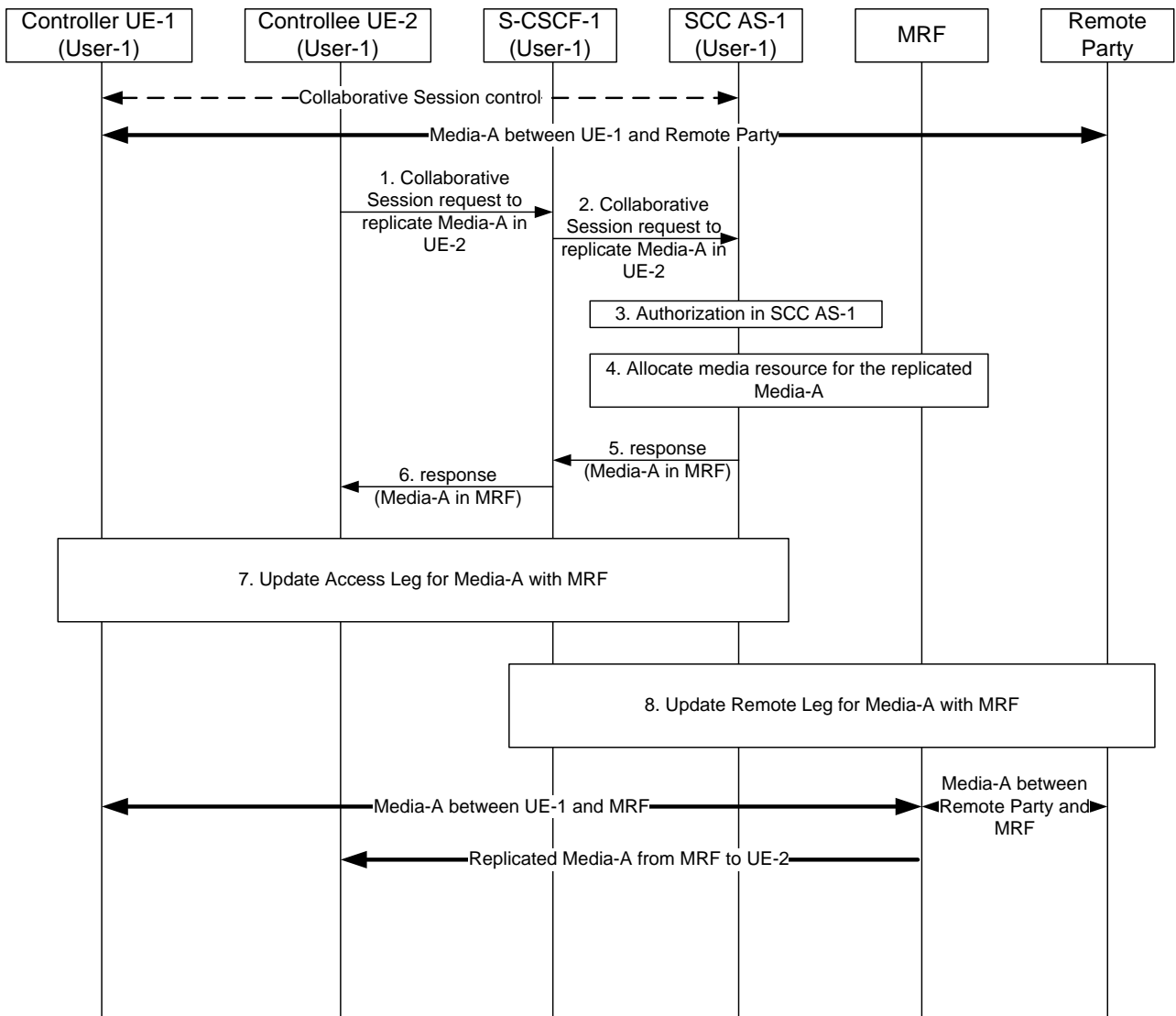
1. Controller UE-1 sends a request towards SCC AS-1 to replicate Media-A to UE-2. The Collaborative Session request includes enough information for the network to:
  - identify that the media flow to be replicated is Media-A;

- identify that the source of the media flow to be replicated is the remote party;
  - identify that the target of the media flow to be replicated is UE-2.
2. S-CSCF-1 forwards the request to SCC AS-1.
  3. SCC AS-1 authorizes the request from UE-1.
  4. SCC AS-1 allocates media resource for the replicated Media-A in MRF.
  5. SCC AS-1 sends a request towards UE-2 to set up the replicated Media-A between UE-2 and the MRF. The request includes enough information for the network to:
    - identify the source of the request as UE-1;
    - identify the remote party;
    - identify that the replicated media flow is Media-A;
    - identify the media resource information of SCC AS-1;
    - identify that the target of the replicated media flow is UE-2.
  - 5a. S-CSCF-1 routes the request towards UE-2.
  6. If UE-2 is an IUT subscriber, the request is routed via SCC AS-2. SCC AS-2 notes that this request relates to the establishment of a Collaborative Session so that any requests by UE-2 related to this Collaborative Session will be forwarded back toward SCC AS-1. A Session Setup request is then routed on towards UE-2. If UE-2 is not an IUT subscriber, S-CSCF-2 routes the request according to normal procedures.
  7. S-CSCF-2 forwards the Session Setup request towards UE-2.
  8. UE-2 sends the Session Setup response towards SCC AS-1.
  - 9- 10. S-CSCF-2 routes the response back toward SCC AS-1 via SCC AS-2 if UE-2 is an IUT subscriber.
  11. S-CSCF-1 forwards the response to SCC AS-1.
  12. SCC AS-1 updates Access Leg in UE-1, finishes Access Leg establishment in UE-2, and updates Remote Leg to communicate Media-A with MRF.

After the above operation, Media-A is established between Controller UE-1 and MRF, between Controllee UE-2 and MRF, and between remote party and MRF.

#### 6.1.3.8.3 Replicating media in network from Controller UE to another UE belonging to same IMS subscription – pull mode

The information flow below illustrates a Collaborative Session scenario in which a UE not participating in the session requests that the network replicate towards itself a media flow that pertains to a UE belonging to the same subscription. It is assumed that, prior to the scenario, UE-2 has discovered that there is an ongoing session between UE-1 and the remote party and that UE-1 is capable of supporting IUT related media procedures. If UE-1 does not support IUT related media procedures, SCC AS-1 or UE-1 will return an error.



**Figure 6.1.3.8.3-1: Replicating media in network from Controller UE to another UE belonging to same IMS subscription - pull mode**

There is Media-A between Controller UE-1 and remote party.

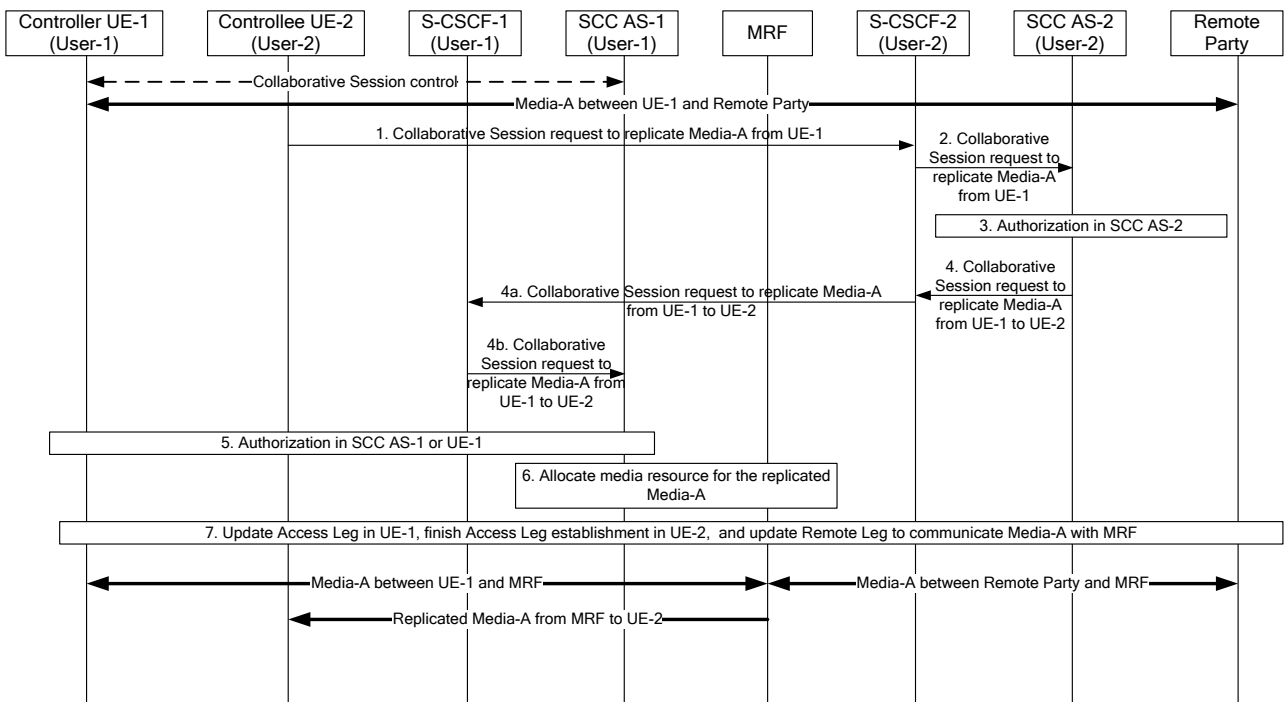
1. UE-2 sends a request towards SCC AS-1 to replicate Media-A of an existing session to UE-2. The session setup request includes enough information for the network to:
  - identify the session that contains the media flow to be replicated;
  - identify that the media flow to be replicated is Media-A;
  - identify that the source of the media flow to be replicated is the remote party;
  - identify that the target of the replicated media flow is UE-2.
2. S-CSCF-1 forwards the request to SCC AS-1.
3. SCC AS-1 authorizes the request from UE-2.
4. SCC AS-1 allocates media resource for the replicated Media-A.
5. SCC AS-1 sends response towards UE-2.
6. S-CSCF-1 forwards the response to UE-2.
7. SCC AS-1 updates the Access Leg on Controller UE-1 for the replicated media flow (Media-A) with MRF.

8. SCC AS-1 updates the Remote Leg to communicate Media-A with MRF.

After the above operation, Media-A is established between Controller UE-1 and MRF, between Controllee UE-2 and MRF, and between remote party and MRF.

### 6.1.3.8.4 Replicating media in network from Controller UE to another UE belonging to different IMS subscription – pull mode

The information flow below illustrates a Collaborative Session scenario in which a UE not participating in the session requests that the network replicate towards itself a media flow that pertains to a UE belonging to different subscription (User-1). It is assumed that User-1 is an IUT subscriber. It is also assumed that, prior to the scenario, the user that requests the media replication (User-2) has discovered that there is an ongoing session between UE-1 and the remote party. If UE-1 does not support IUT related media procedures or the user is not an IUT subscriber, SCC AS-1 or UE-1 will return an error.



**Figure 6.1.3.8.4-1: Replicating media in network from Controller UE to another UE belonging to different IMS subscription – pull mode**

There is Media-A between Controller UE-1 and remote party.

1. UE-2 sends a request towards UE-1 to replicate Media-A to UE-2. The request includes enough information for the network to:
  - identify the session that contains the media flow to be replicated;
  - identify that the media flow to be replicated is Media-A;
  - identify that the source of the media flow to be replicated is the remote party;
  - identify that the target of the replicated media flow is UE-2.
2. S-CSCF-2 forwards the request to SCC AS-2.
3. SCC AS-2 authorizes the request from UE-2.
4. SCC AS-2 sends a request towards UE-1 to replicate Media-A from the remote party to UE-2. The request includes enough information for the network to:
  - identify the session that contains the media flow to be replicated;
  - identify the source of the request as UE-2;

- identify that the replicated media flow is Media-A;
  - identify that the source of the media flow to be replicated is the remote party;
  - identify that the target of the replicated media flow is UE-2.
- 4a. S-CSCF-2 forwards the request towards UE-1.
  - 4b. S-CSCF-1 forwards the request to SCC AS-1.
  5. SCC AS-1 or UE-1 authorizes the request from UE-2.
  6. SCC AS-1 allocates media resource for the replicated Media-A.
  7. SCC AS-1 updates Access Leg in UE-1, finishes Access Leg establishment in UE-2, and updates Remote Leg to communicate Media-A with MRF.

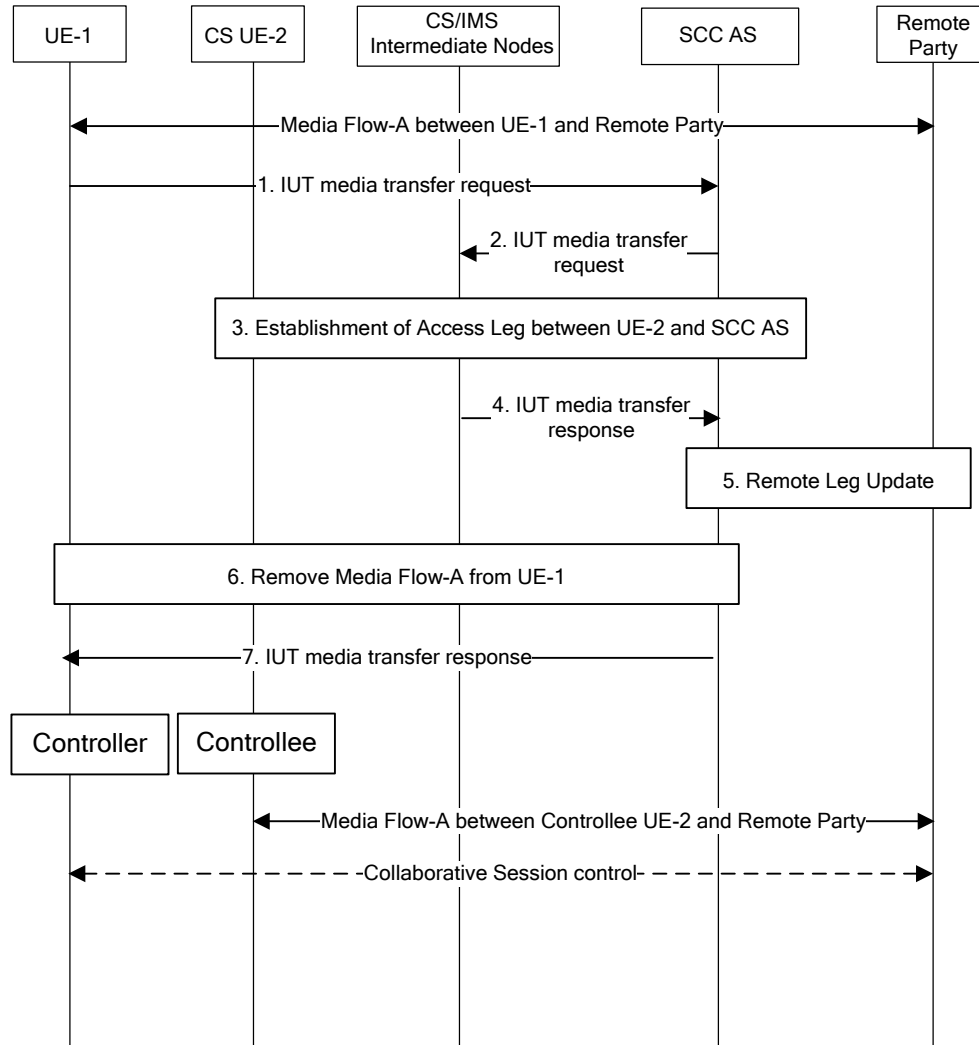
After the above operation, Media-A is established between Controller UE-1 and MRF, between Controllee UE-2 and MRF, and between remote party and MRF.

### 6.1.3.9 Inter-UE Transfer between IMS UEs and CS UEs

Inter-UE Transfer can be performed between IMS UEs that connect to the IMS via an IP-CAN and CS UEs that belong to the same or different IMS subscriptions of the same operator and connect to IMS via the CS/IMS Intermediate Node (e.g. the MSC Server enhanced for ICS). Before the transfer, the CS UE shall be registered to IMS via the CS/IMS Intermediate Node.

#### 6.1.3.9.1 Establish Collaborative Session between IMS UEs and CS UEs by transferring media

The figure below provides an information flow of establishing a Collaborative Session by transferring media flow(s) from the IMS UE to the CS UE of the same IMS subscription via the CS/IMS Intermediate Node (e.g. the MSC Server enhanced for ICS). The IMS UE-1 and CS UE-2 connect to IMS via IP-CAN and the CS/IMS Intermediate Node respectively. There is an ongoing IMS session between UE-1 and a remote party, which is anchored at the SCC AS. UE-1 transfers the media flow from UE-1 to UE-2 to establish a Collaborative Session. After the transfer, UE-1 becomes Controller UE of the Collaborative Session, and UE-2 becomes Controllee UE.



**Figure 6.1.3.9.1-1: Establish Collaborative Session by transferring media from IMS UE to CS UE**

1. UE-1 sends an IUT media transfer request to the SCC AS to transfer Media Flow -A from UE-1 to UE-2. The IUT media transfer request shall include the enough information for the SCC AS to:
  - identify that the transferred media flow is Media Flow-A;
  - identify that the target of the transferred media flow is UE-2, which is a CS UE;
  - keep the control of the Collaborative Session in UE-1.
2. The SCC AS sends request to the CS/IMS Intermediate Node to establish the Access Leg of UE-2 for Media Flow-A.
3. The CS/IMS Intermediate Node establishes the Access Leg between UE-2 and the SCC AS, using the ICS session terminating procedures for non ICS UE or UE unable to use ICS UE capabilities as specified in TS 23.292 [3].
4. The CS/IMS Intermediate Node sends an IUT media transfer response to the SCC AS.
5. The SCC AS performs the Remote Leg Update procedures as specified in clause 6a.1.2 in TS 23.237 [2] to update the media information of Media Flow-A with the remote party.
6. The SCC AS removes Media Flow-A from UE-1.
7. The SCC AS sends an IUT media transfer response to UE-1. A Collaborative Session is established, for which UE-1 becomes the Controller UE and UE-2 becomes a Controllee UE.



When the above transfer is completed the SCC AS retains the service state (e.g. media flows status) of UE-1 and UE-2, and UE-1 retains the control of the Collaborative Session.

NOTE 1: If, besides Media Flow-A, there are other media flows between UE-1 and the remote party, these other media flows shall not be impacted by the above Inter-UE Transfer operation, i.e. these other media flows remain on UE-1.

NOTE 2: The above information flow does not require any enhancements to Release 9 specifications; it is already covered by the combination of Release 9 versions of TS 23.237 [2] and TS 23.292 [3].

### 6.1.3.10 Session Discovery

#### 6.1.3.10.1 General

In order to solicit the IUT of media flows or control of an ongoing session from other UE(s) under the same or different subscriptions of the same operator, it shall be possible for a UE capable of IUT to discover ongoing session information on other UE(s) as follows:

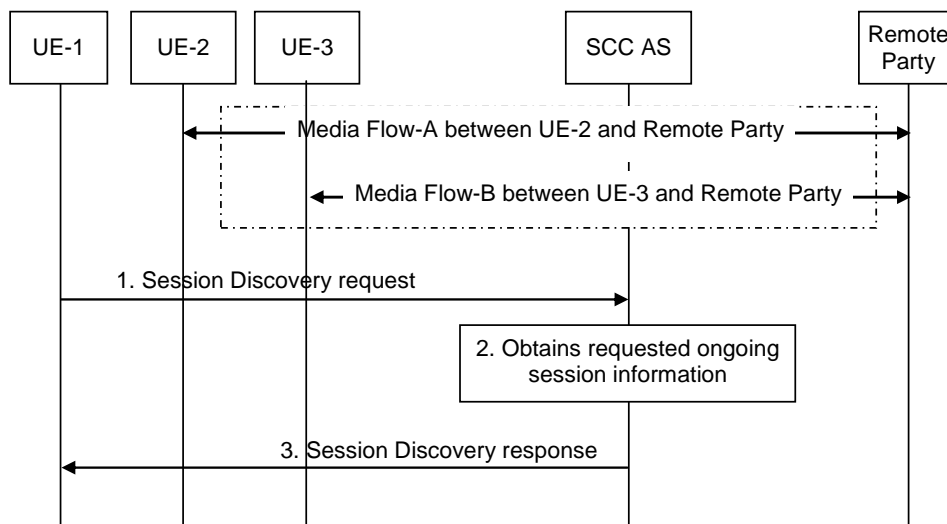
- Session information for the other UE(s), including session identifier, source UE identifier (e.g. GRUU or IMPU), remote end identifier, identity of the Controller UE for the related Collaborative Session;
- Media flow information for the ongoing session(s) in other UE(s), including: type (voice, video, etc.), status (held, active, etc.), media flow identifier;
- Service Identifier for the service the session is related to.

The UE may use the above information for IUT in addition to the availability and capabilities of other UE(s) as specified in Rel-9.

The SCC AS which serves target UE(s) of session discovery shall filter information on some or all of the sessions or media flows composing the session on the target UE(s) based on user service configuration or operator policy before providing ongoing session information to the UE which has requested session discovery.

#### 6.1.3.10.2 Discovery of ongoing session information on other UE(s) belonging to same IMS subscription

The figure below shows an information flow of UE-1 requesting ongoing session information for the other UEs, assuming that UE-1, UE-2 and UE-3 belong to the same IMS subscription and there is a session with Media Flow-A between UE-2 and the remote party and another session with Media Flow-B between UE-3 and the remote party.



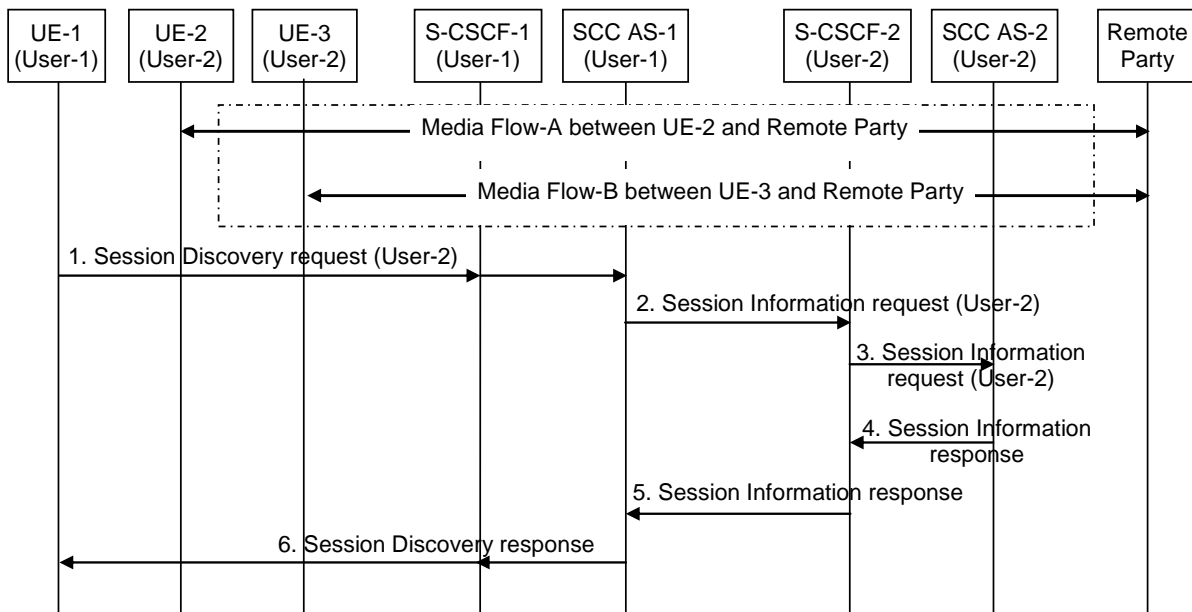
**Figure 6.1.3.10.2-1: Discovery of ongoing session information on other UE(s) belonging to the same IMS subscription**

1. UE-1 sends the SCC AS a Session Discovery request for ongoing session information for the UEs belonging to the same IMS subscription. The Session Discovery request indicates the information requested to be provided in the response.

2. The SCC AS retrieves the requested information for all ongoing sessions for the user's UEs.
3. The SCC AS, if required, authorizes that UE-1 is allowed to receive the requested information, and sends the UE-1 a Session Discovery response containing the requested session related information for UE-2 and UE-3. The SCC AS performs filtering as specified in clause 6.1.3.10.1 before sending a Session Discovery response to the UE-1.

### 6.1.3.10.3 Discovery of ongoing session information on other UE(s) belonging to different IMS subscription

The figure below shows an information flow of UE-1 requesting ongoing session information for the other UEs, assuming that UE-1 belongs to User-1 while UE-2 and UE-3 belong to User-2. It is also assumed that there is a session with Media Flow-A between UE-2 and the remote party, and another session with Media Flow-B between UE-3 and the remote party.

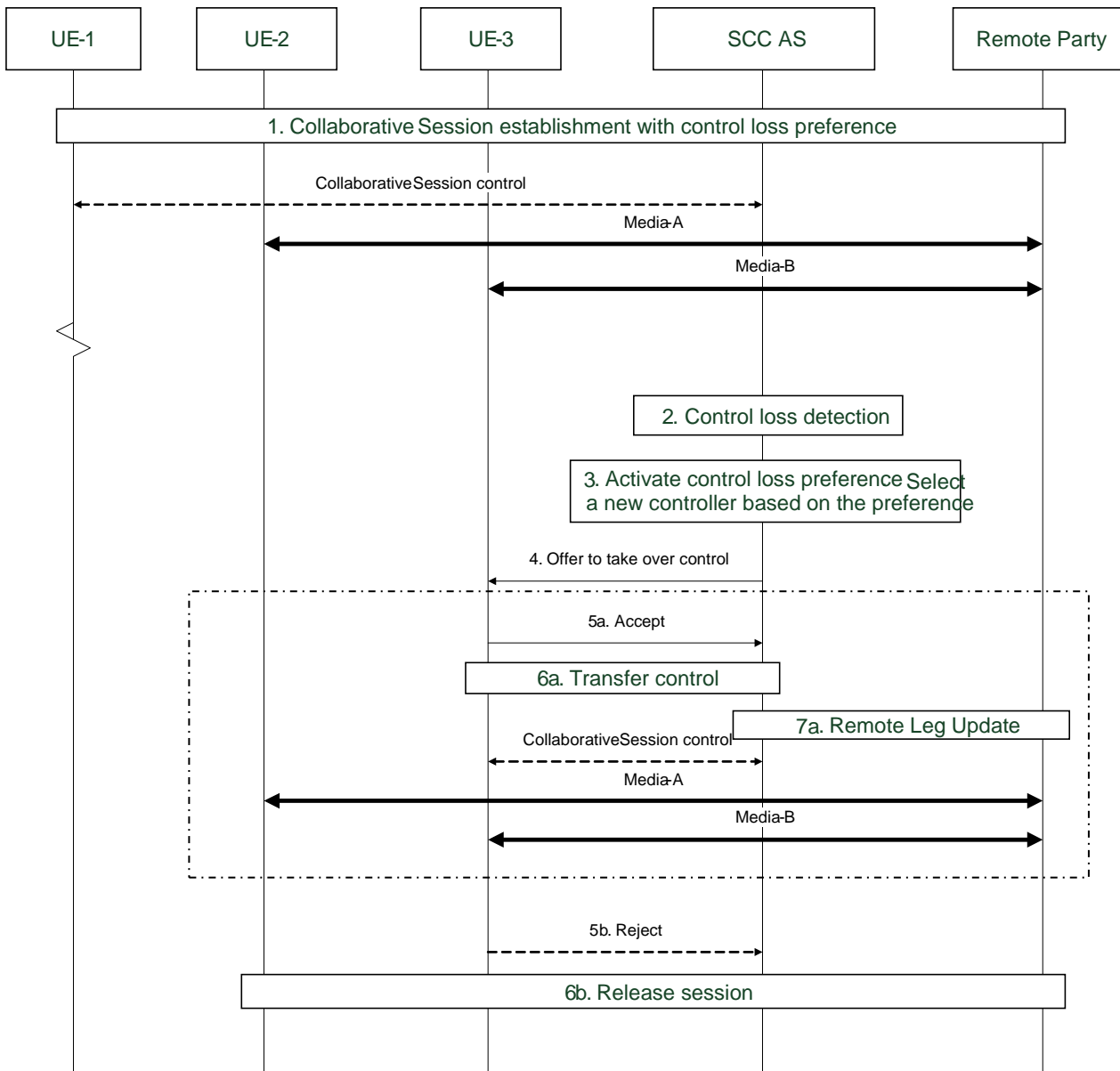


**Figure 6.1.3.10.3-1: Discovery of ongoing session information on other UE(s) belonging to different IMS subscription**

1. UE-1 sends SCC AS-1 a Session Discovery request for ongoing session information for User-2's UEs. The Session Discovery request indicates the information requested to be provided in the response.
2. SCC AS-1 sends a Session Information request for ongoing session information for User-2's UEs to S-CSCF-2 which serves User-2.
3. S-CSCF-2 forwards the Session Information request to SCC AS-2 which serves User-2.
4. SCC AS-2, if required, authorizes that UE-1 is allowed to receive ongoing session information for User-2's UEs, and sends a Session Information response containing ongoing session information for UE-2 and UE-3. SCC AS-2 performs filtering as specified in clause 6.1.3.10.1 before sending a Session Information response.
5. S-CSCF-2 forwards the Session Information response to SCC AS-1.
6. SCC AS-1 sends UE-1 a Session Discovery response containing ongoing session information for UE-2 and UE-3.

### 6.1.3.11 Collaborative Session handling upon loss of Collaborative Session Control

The figure below shows an information flow where the Controller UE sets control loss preferences and SCC AS acts upon the loss of Collaborative Session Control based on the preference.



**Figure 6.1.3.11-1: Collaborative Session handling upon loss of Collaborative Session control**

1. A Collaborative Session is established between UE-1, UE-2, UE-3 and a remote party. UE-1 is the Controller UE, and UE-2 and UE-3 are Controllee UEs. Control loss preference is sent/updated to SCC AS any time before or during the Collaborative Session, including:

- which UE may be the successive controller UE, or
- criteria on how to select the successive Controller UE

2. SCC AS detects the Collaborative Session Control is lost during the session.

NOTE 1: How SCC AS detects the loss of Collaborative Session Control is not within the scope of this document.

3. The loss of Collaborative Session Control triggers the activation of control loss preference. SCC AS selects a Controllee UE as the new Controller UE based on control loss preference

NOTE 2: If no control loss preference is provided, SCC AS releases the Collaborative Session.

4. SCC AS offers Collaborative Session Control to the selected Controllee UE, UE-3.

Steps 5a – 7a are for the case where UE-3 accepts to become Controller UE.

5a. The Controllee UE-3 accepts the offer to become a new Controller UE.

6a. SCC AS transfers Collaborative Session Control to UE-3.

7a. SCC AS updates the Remote Leg towards the remote party with the information of the new local end (i.e. UE-3 as the new Controller UE of the Collaborative Session).

Steps 5b – 6b are for the case that the Controllee UE refuses to be a new Controller UE.

5b. Control transfer is not accepted by the Controllee UE.

NOTE 3: The Controllee UE may reject the offer because its user does not want to take over control, or the UE may not understand the transfer request; or the UE may not respond.

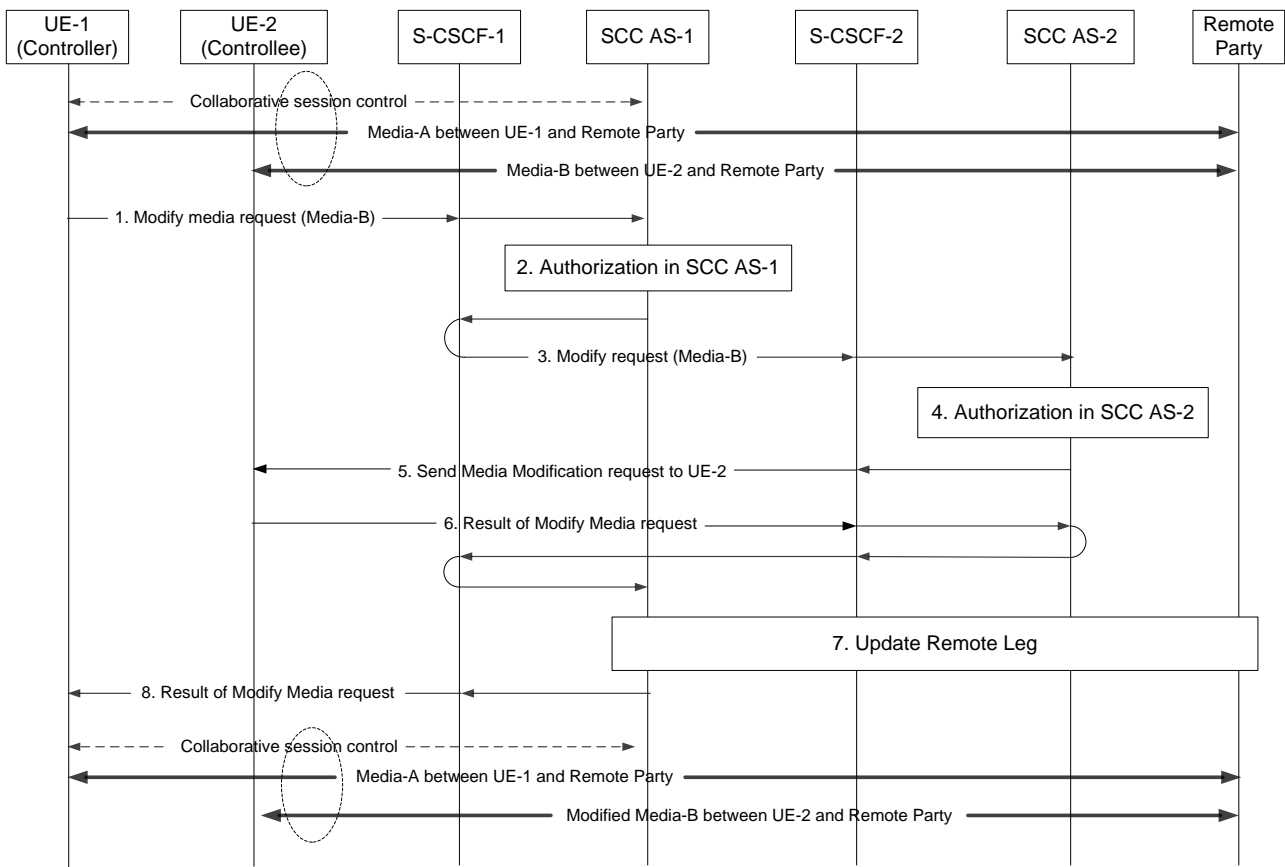
6b. SCC AS releases the Collaborative Session associated with lost Controller UE.

### 6.1.3.12 Media modification among UEs under different subscriptions

This section provides information flows for media modification among UEs under different subscriptions in a collaborative session.

#### 6.1.3.12.1 Controller UE initiated media modification on Controllee UE

The information flow shows a Controller UE modifying a Media Flow that is originated from or terminated at the Controllee UE. As a pre-requisite, there exists a Collaborative Session with two media flows, Media Flow-A on the Controller UE (UE-1) and Media Flow-B on the Controllee UE (UE-2).



**Figure 6.1.3.12-1: Controller UE initiated media modify on a Controllee UE**

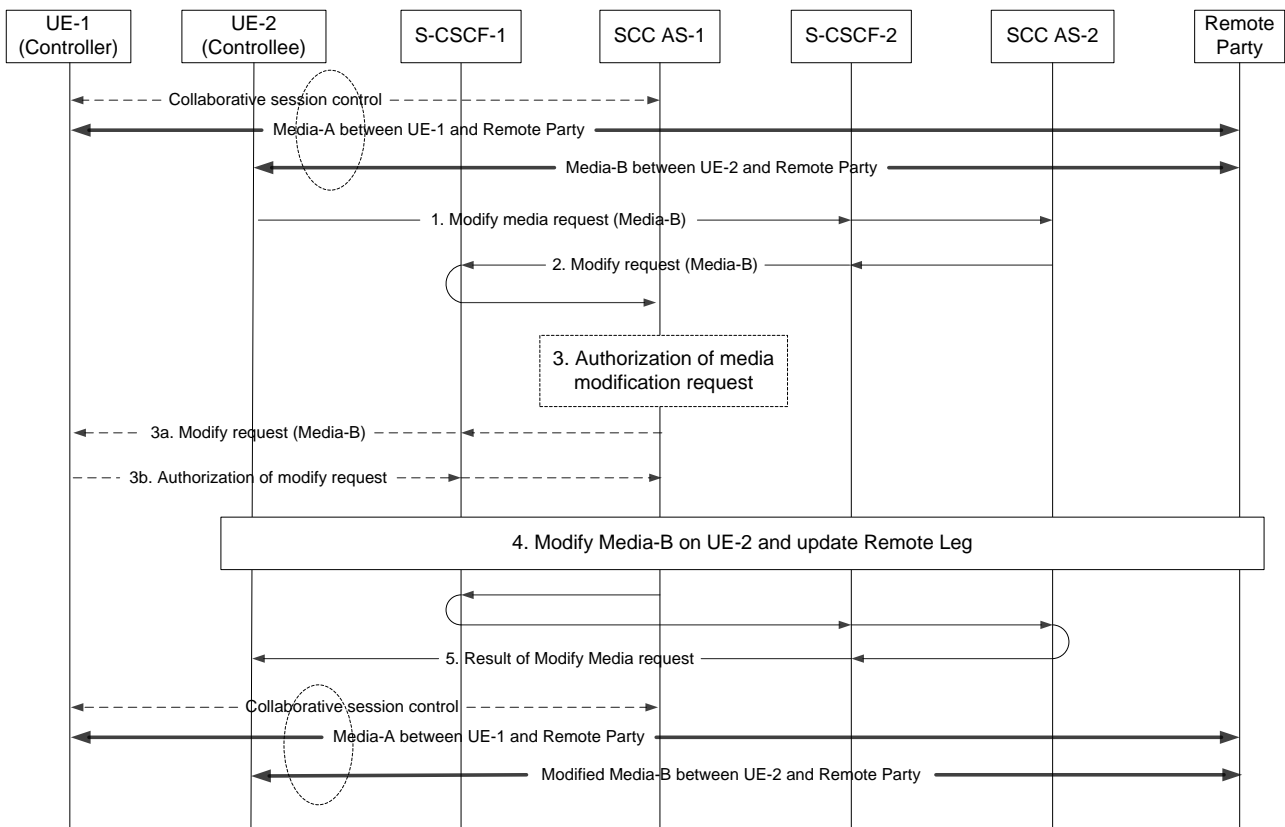
1. UE-1 sends a Modify media request to SCC AS-1 serving UE-1 to modify Media Flow-B on UE-2. The request includes media modification information pertaining to Media Flow-B. The IUT media modification request shall include enough information for the SCC AS to:

- identify that the modified media is Media Flow-B;
- identify that the modified media is on UE-2;

- identify the modification requested to Media Flow-B;
  - keep the control of Collaborative Session in UE-1.
2. The SCC AS-1 verifies that UE-2's (User-2's) authorization configuration in UE-1's (User-1's) Collaboration Profile is Media Source Privilege.
  3. The SCC AS-1 sends the Modify Media Request to SCC AS-2 that serves UE-2 via S-CSCF-1 and S-CSCF-2.
  4. The SCC AS-2 verifies that UE-1's (User-1's) authorization configuration in UE-2's (User-2's) Collaboration Profile is Controller Privilege.
  5. The SCC AS-2 sends Media Modification Request to UE-2, UE-2 modifies the media.
  6. The UE-2 sends the result of media modification to SCC AS-2 and SCC AS-2 forwards it to SCC AS-1 via S-CSCF-2 and S-CSCF-1.
  7. The SCC AS-1 updates the Remote Leg with Media Flow-B modified upon receiving modification result from UE-2.
  8. The SCC AS-1 sends result of modify media request to UE-1.

**6.1.3.12.2 Controllee UE initiated media modification on itself**

The information flow shows a Controllee UE modifying a Media Flow that is originated from or terminated at the same Controllee UE. As a pre-requisite, there exists a Collaborative Session with two media flows, Media Flow-A on the Controller UE (UE-1) and Media Flow-B on the Controllee UE (UE-2).



**Figure 6.1.3.12-2: Controllee UE initiated media modify on itself**

1. UE-2 sends a Modify media request to modify Media Flow-B on itself. The request includes media modification information pertaining to Media Flow-B. The IUT media modification request shall include enough information for the SCC AS to:
  - identify that the modified media is Media Flow-B;

- identify that the modified media is on UE-2; and
  - identify the modification requested to Media Flow-B.
2. The SCC AS-2 forwards the Media Modification Request to SCC AS-1 that serves the controller via S-CSCF-2 and S-CSCF-1.
  3. The SCC AS-1 authorizes the Media Modification Request.
- 3a~3b. If SCC AS-1 cannot authorize Media Modification Request, it queries controller UE-1 for authorization.
- NOTE: Steps 3 (including 3a~3b) is optional depending on operator's configuration.
4. SCC AS-1 identifies Media Flow-B as associated with UE-2 and sends Modify Media Request to UE-2 via S-CSCF-1 and S-CSCF-2. UE-2 modifies the Media Flow. The SCC AS-1 updates the Remote Leg with Media Flow-B modified.
  5. The SCC AS-1 sends result of modify media request to UE-2.

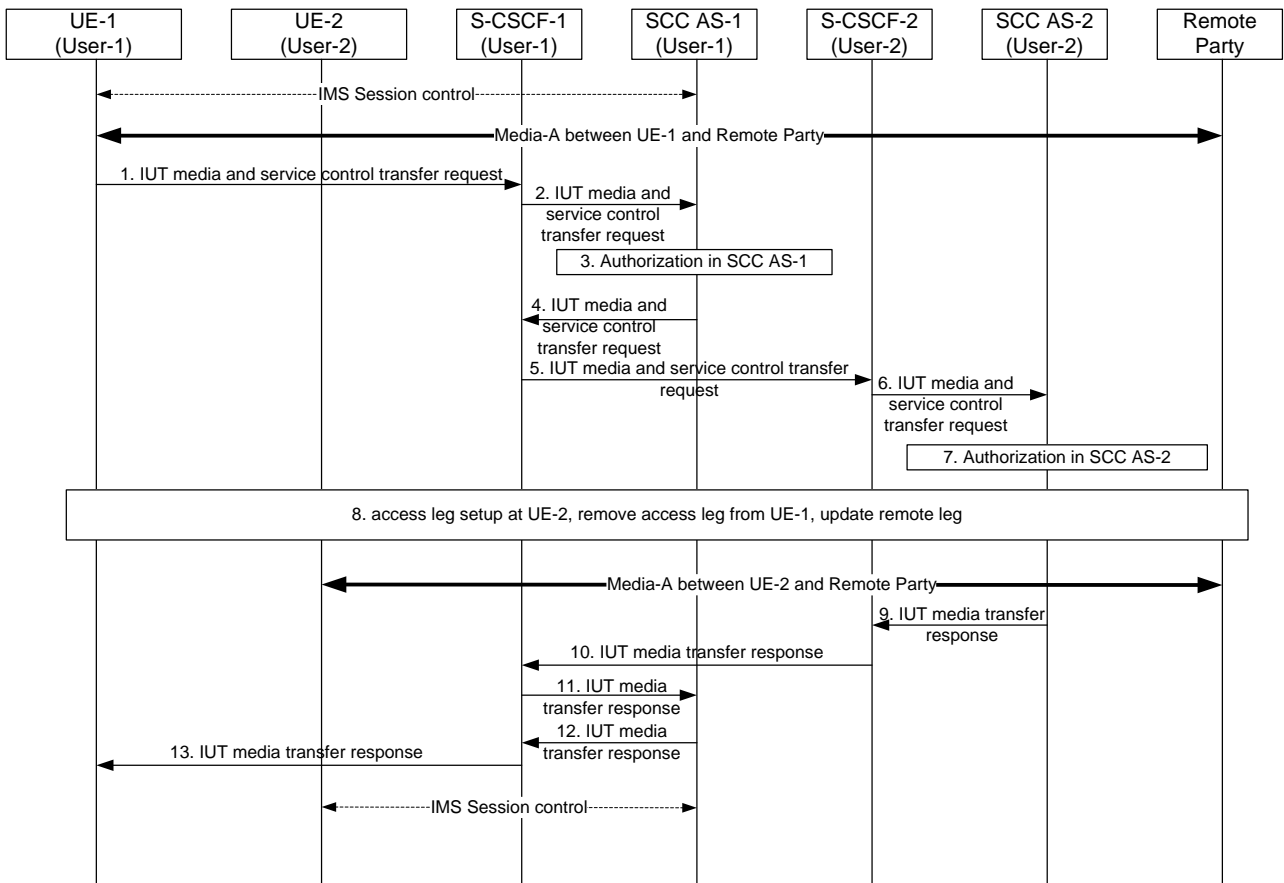
#### 6.1.3.13 IUT without establishing a Collaborative Session between UEs belonging to different IMS subscription within same operator

*Editor's Note: How to resolve the issue of services associated with UE-1 remaining in the signaling path to the remote party after IUT has occurred is FFS. Resolution of this issue is not expected in Rel-10.*

##### 6.1.3.13.1 IUT initiated by the source UE

UE-1 and UE-2 belong to different IMS user subscriptions within the same operator network and UE-1 is involved in an IMS session with remote party. The information flow in Figure 6.2.3.x.1-1 shows transfer of the session from UE-1 to UE-2. Since the entire session is transferred simultaneously, the roles of the Controller and Controllee UEs are not applicable.

NOTE 1: This signalling flow does not require UE-2 to have IUT capabilities but in this example, UE-2 is shown to have IUT capabilities, thus introducing SCC-AS-2 in the signalling path.



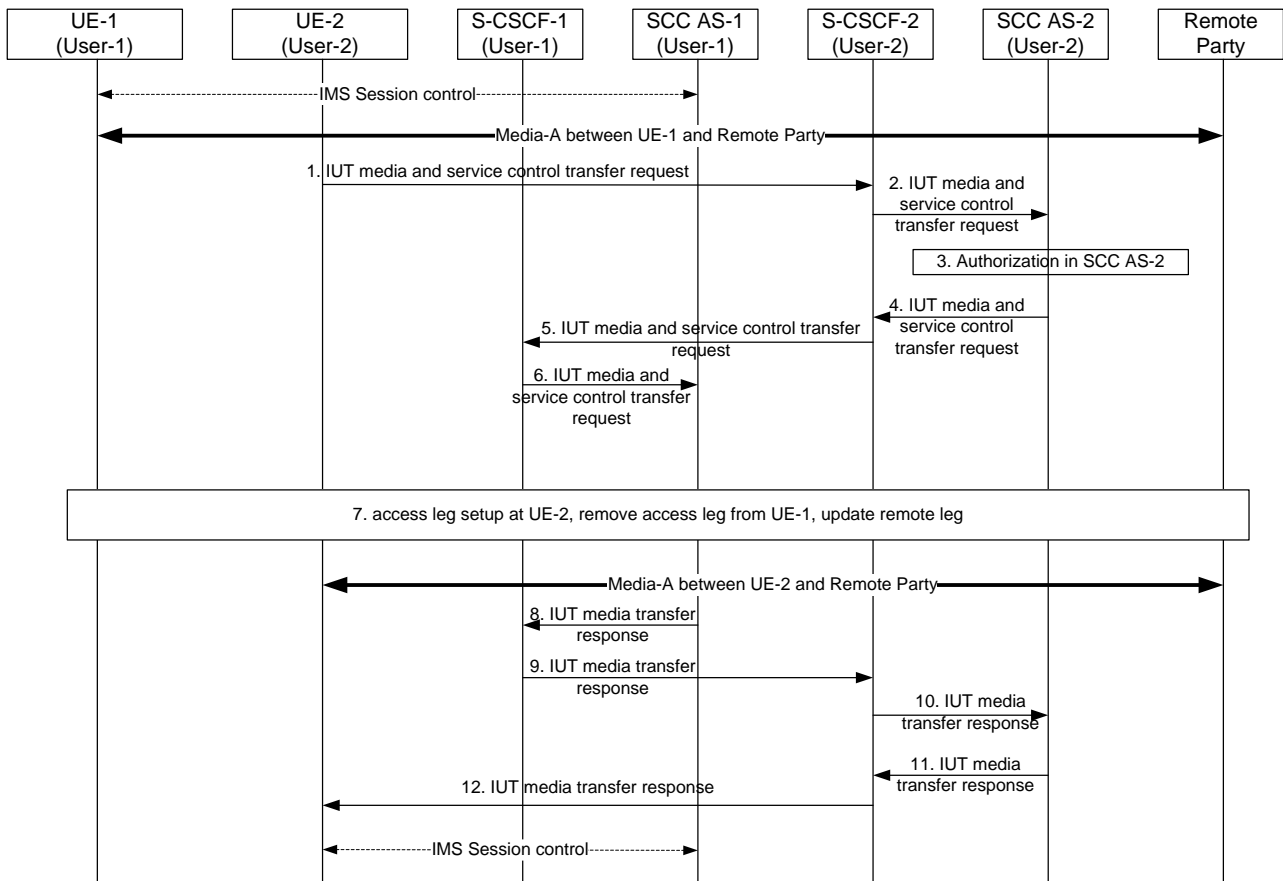
**Figure 6.1.3.13.1-1: IUT initiated by source UE without establishing a collaborative session - UEs belong to different IMS subscriptions**

1. UE-1 sends IUT media and service control transfer request to the SCC AS to transfer the session that includes Media-A from UE-1 to UE-2. The IUT media and service control transfer request shall include the enough information for the network to:
  - identify the transferred session;
  - identify the target of the transferred session is UE-2;
  - identify access leg of UE-1 to be transferred to UE-2.
2. S-CSCF-1 forwards the session setup request to SCC AS-1.
3. SCC AS-1 may authorize the IUT request to transfer the session to UE-2 based on network policy and UE-1 preferences.
- 4-6. The request for IUT is forwarded to the S-CSCF-2 serving UE-2. It is assumed that UE-2 is IUT capable and user-2 is an IUT subscriber, and thus the IUT request is forwarded to SCC-AS-2 serving UE-2.
7. SCC-AS-2 may authorize the incoming request for IUT to determine if such requests from UE-1 to UE-2 are allowed by the network operator policy and also by user-2's profile and preferences.
8. establish the access leg to UE-2 for setting up Media-A between remote party and UE-2 and update remote leg.
- 9-13. Respond with IUT success response and release access leg with UE-1.

NOTE 2: The session is still anchored at SCC-AS-1 and thus the session control signalling is controlled by UE-2 but anchored at SCC-AS-1.

### 6.1.3.13.2 IUT initiated by target UE

UE-1 and UE-2 belong to different IMS user subscriptions within the same operator network and UE-1 is involved in an IMS session with remote party. The information flow in Figure 6.2.3.x.2-1 shows transfer of the session from UE-1 to UE-2 initiated by UE-2. Since the entire session is transferred simultaneously, the roles of the Controller and Controllee UEs are not applicable. It is assumed that, prior to the scenario, User-2 has discovered that there is an ongoing session between UE-1 and the remote party.



**Figure 6.1.3.13.2-1: IUT initiated by source UE without establishing a collaborative session - UEs belong to different IMS subscriptions**

1. UE-2 sends a request for IUT to S-CSCF-2 to transfer the session currently ongoing at UE-1. It is assumed that UE-2 has prior knowledge of the ongoing session between UE-1 and the remote party. The request for IUT request includes enough information for the network to:
  - identify the transferred session;
  - identify the target of the transferred session is UE-2.
2. S-CSCF-2 forwards the request to SCC-AS-2
3. SCC AS-2 may authorize the IUT request to transfer the session to UE-2 based on network policy and UE-2 preferences.
- 4-6. The request for IUT is forwarded to the S-CSCF-1 serving UE-1.
7. The SCC AS-1 requests the UE-1 to authorize the pull request or the SCC AS authorizes the request on behalf of UE-1 (e.g. pre-configured). If the request is authorized, SCC AS continues in accordance with step 2 of clause 6a.6 in TS 23.237 [2], i.e. SCC AS establishes a session with UE-2 for the Media-A, removes Media-A from UE-1, and updates Remote Leg using the Remote Leg Update procedure.
- 8-12. SCC-AS-1 responds with a IUT success response towards UE-2.



NOTE 1: The session is still anchored at SCC-AS-1 and thus the session control signalling is controlled by UE-2 but anchored at SCC-AS-1.

## 6.1.4 Collaboration Profile

To satisfy the architectural requirement for network-based authorization of Collaborative Session requests, an authorization mechanism that is based upon per-subscriber provisioned data is assumed. The provisioned data is to be acted upon by the SCC AS when the SCC AS receives a Collaborative Session service request. The name given to this mechanism is Collaboration Profile.

NOTE Invocation of the Collaboration Profile by the SCC AS takes precedence over the UE-based authorization mechanism; that is, if a Collaborative Session request is blocked at the SCC AS per authorization logic based upon the contents of the Collaboration Profile, an error response will be returned to the issuer of the request, and the UE-based authorization mechanism will have no opportunity to be exercised.

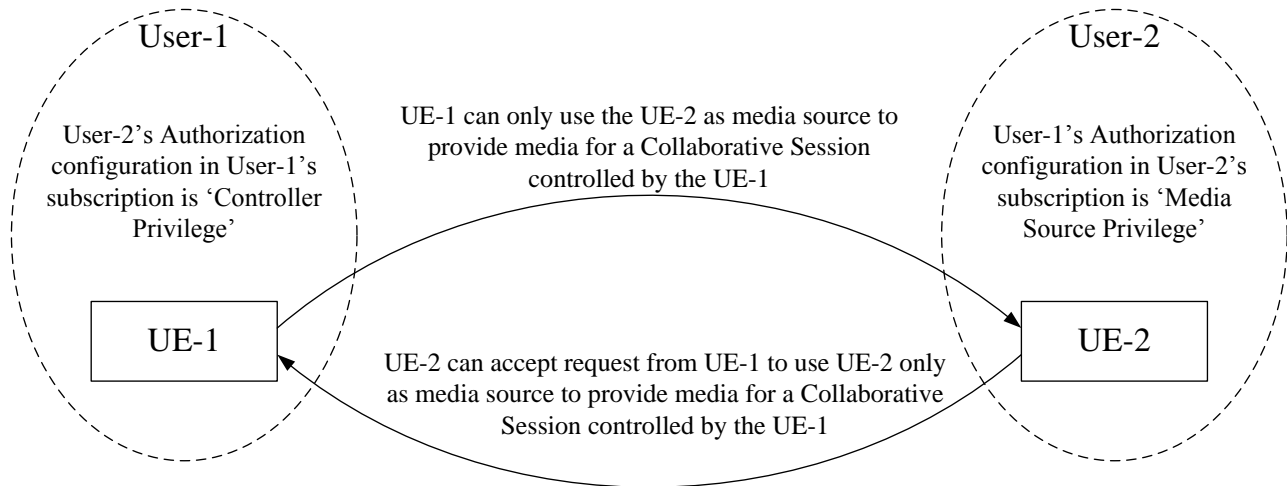
An IMS subscriber's profile may include zero or more Collaborator(s) with Collaboration privileges as determined by the scope of collaboration; e.g.:

- Controller Privilege: the Collaborator can use the subscriber's device as a media source to provide media for a Collaborative Session that the Collaborator controls.
- Media Source Privilege: the Collaborator's device can be used to provide media for a Collaborative Session that the subscriber controls.

Table 6.1.4-1, Figure 6.1.4-1 and Figure 6.1.4-2 below provide two ways of illustrating example collaboration profile entries for a hypothetical User-1: User-2 pair for the purpose of explaining the semantics associated with various collaboration privilege settings.

**Table 6.1.4-1: Example of collaboration profile entries for the User-1: User-2 pair**

User-2's Authorization profile entry in User-1's subscription	User-1's Authorization profile entry in User-2's subscription	Operations allowed for UE belonging to User-1	Operations allowed for UE belonging to User-2
Both Controller and Media Source Privileges	Both Controller and Media Source Privileges	Can execute all kinds of Collaborative Session procedures to UE belonging to User-2	Can accept all kinds of Collaborative Session procedures from UE belonging to User-1
Controller Privilege	Media Source Privilege	Can only use the UE(s) belonging to User-2 as media source to provide media for a Collaborative Session controlled by the UE belonging to User-1	Can accept request from UE belonging to User-1 to use the UE(s) belonging to User-2 only as media source to provide media for a Collaborative Session controlled by the UE belonging to User-1



**Figure 6.1.4-2: Example of controller privilege and media source privilege profile for Collaborative Session**

In addition to and in conjunction with the network-based authorization mechanism, the subscriber may request to receive authorization requests upon Collaborative Session setup involving a particular Collaborator.

The collaboration profile may be configured in IMS (AS or HSS) upon subscription and/or updated by the subscriber anytime after subscription, and/or updated by the network (upon consent from the subscriber and/or Collaborator) during Collaborative Session setup.

## 6.1.5 Execution of supplementary services

### 6.1.5.1 General

Even though the media components for the Collaborative Session are split onto multiple Access Legs of different UEs, the remote end is presented with one session including all the media components. This section describes the SCC AS and IUT UE procedures for handling supplementary services as described in TS 22.173 [4].

Whether or not the UEs involved in a Collaborative Session pertain to multiple IMS subscriptions, the Controllee UEs can be under a different service profile than the Controller UE. The service profile of the Controller UE shall determine the set of Application Servers and services that are invoked for the overall session with the remote end.

For a Controllee UE's Access Leg where CS media is used, the interactions described in the following sections still apply. However, the operations on the CS media follow the procedures as described in TS 23.292 [3].

### 6.1.5.2 Originating Identification Presentation (OIP)

For Collaborative Sessions established concurrently with originating IMS session setup, the SCC AS associated with the Controller UE shall provide the originating party information for all UEs involved in the Collaborative Session, even when the UEs involved in the Collaborative Session pertain to multiple IMS subscriptions.

### 6.1.5.3 Originating Identification Restriction (OIR)

The OIR service is not impacted by IUT.

### 6.1.5.4 Terminating Identification Presentation (TIP)

For Collaborative Sessions established concurrently with terminating IMS session setup, the SCC AS associated with the Controller UE shall provide the connected party information for all UEs involved in the Collaborative Session, even when the UEs involved in the Collaborative Session pertain to multiple IMS subscriptions.

### 6.1.5.5 Terminating Identification Restriction (TIR)

The TIR service is not impacted by IUT.

#### 6.1.5.6 Communication Diversion (CDIV)

The CDIV service is not impacted by IUT.

#### 6.1.5.7 Communication Hold (HOLD)

If the Controller UE wants to invoke the HOLD service on one or more media component(s), the Controller UE shall invoke the HOLD procedures, as defined in TS 24.610 [5]. The Hosting SCC AS shall act on the HOLD requests by updating all the Controllee UEs whose media status are changed and shall update the remote Access Leg using the procedures defined in TS 24.610 [5].

If a Controllee UE wants to invoke the HOLD service on one or more media component(s) that it hosts, the request to do so must be authorized by the Controller UE (or by the Hosting SCC AS on behalf of the Controller UE). If the request is authorized, the Controllee UE shall invoke the HOLD procedures, as defined in TS 24.610 [5].

#### 6.1.5.8 Communication Barring (CB)

The CB service is not impacted by IUT.

#### 6.1.5.9 Message Waiting Indication (MWI)

The MWI service is not impacted by IUT.

#### 6.1.5.10 Conference (CONF)

Only the Controller UE can invoke the CONF service for the Collaborative Session and it shall follow the procedures as defined in TS 24.605 [6] for any CONF service related operations. The SCC AS associated with a Controllee UE rejects a request to invoke the CONF service.

When the remote end sends a request for the CONF service to replace an existing session, the SCC AS shall deliver the request for CONF service to the Controller UE, which then sets up new session following the procedures defined in TS 24.605 [6].

#### 6.1.5.11 Explicit Communication Transfer (ECT)

Only the Controller UE can invoke the ECT service on behalf of the Collaborative Session and it shall follow the procedures as specified in TS 24.629 [7]. Upon receiving notification that ECT has been performed successfully, the Controller UE shall terminate the previous active session with the transferee UE by terminating all related media control sessions on the Controllee UEs. The SCC AS associated with a Controllee UE rejects a request to invoke the ECT service.

Upon receiving an ECT transfer request from the remote end to transfer the Collaborative Session, the SCC AS shall deliver the request to the Controller UE.

Upon receiving an ECT transfer request to transfer the Collaborative Session, the Controller UE shall establish a new session towards the transfer target following the procedures defined in TS 24.629 [7].

#### 6.1.5.12 Advice of Charge (AOC)

When the AOC service specified in TS 24.647 [8] is active, the SCC AS shall deliver charging information during the communication to the Controller UE.

#### 6.1.5.13 Closed User Groups (CUG)

The CUG service is not impacted by IUT.

#### 6.1.5.14 Three-Party (3PTY)

The 3PTY service in TS 24.605 [6] is considered as a special case of CONF service and the interaction with IUT is the same as that specified in clause 4.8.10 for CONF service.

#### 6.1.5.15 Flexible Alerting (FA)

The FA service is not impacted by IUT.

#### 6.1.5.16 Communication Waiting (CW)

The CW service is not impacted.

#### 6.1.5.17 Completion of Communications to Busy Subscriber (CCBS)/Completion of Communications by No Reply (CCNR)

The CCBS/CCNR service is not impacted.

#### 6.1.5.18 Customized Alerting Tones (CAT)

For Collaborative Sessions established concurrently with terminating IMS session setup, the CAT provided by the network (under the control of the SCC AS associated with the Controller UE) to the remote party is the CAT associated with the Controller UE.

#### 6.1.5.19 Malicious Communication IDentification (MCID)

The MCID service is not impacted by IUT.

#### 6.1.5.20 Reverse Charging

The Reverse Charging service is not impacted by IUT.

#### 6.1.5.21 Personal Network Management (PNM)

The PNM service is not impacted by IUT.

#### 6.1.5.22 Customized Ringing Signal (CRS)

For Collaborative Sessions established concurrently with terminating IMS session setup, the Customized Ringing Signal (CRS) provided to both the Controller UE and all Controllee UEs is the CRS associated with the remote party. For Collaborative Sessions established concurrently with originating IMS session setup, the CRS provided to the remote party is the CRS associated with the Controller UE.

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## 7 Conclusions

A variety of enhancements to Rel-9 Inter-UE Transfer (IUT) have been considered in the present TR, most notably the extension of IUT and Collaborative Session capabilities to UEs that belong to different IMS subscriptions under the same operator. New capabilities such as media flow replication and IUT initiated by the target UE ('pull mode' media flow transfer) have also been considered in order to address requirements received from other standards development organizations. In addition, the TR captures a mechanism for session discovery that is used to realize features such as 'pull mode' media flow transfer from different UEs. Support for transfer of control of a Collaborative Session is also included, but in Rel-10 such control transfer functionality is limited to UEs within a single IMS subscription and sharing the same service profile.

A large set of information flows that illustrate the enhancements have been included in this TR. From a study of these information flows, it is inferred that no essential extension of the Rel-9 IUT architecture model is required in order to deliver the Rel-10 enhancements. The SCC AS remains the key element in the architecture model for Rel-10 IUT, though it is enhanced to deliver additional IUT capabilities. Extension of IUT and Collaborative Session capabilities to multiple IMS subscriptions introduces new requirements for authorization of service requests; the Collaboration Profile concept is advanced as a network-based means to satisfy these requirements.

### 7.1 Conclusion on session discovery

The capability for a UE to discover sessions on other UEs is essential in order to realize features such as pull mode session transfers from different UEs. The session information has to be up-to-date and contain enough details to be able to be used in IUT operations.

The Session Discovery mechanism detailed in clause 6.1.3.10 fulfils these goals and shall be specified in normative Release 10 specifications.

## 7.2 Conclusion on extension of IUT and Collaborative Session capabilities to multiple UEs belonging to different IMS subscriptions

The extension of IUT and Collaborative Session capabilities specified in Rel-09 to multiple UEs belonging to different IMS subscriptions under the same operator requirement is fulfilled by architectural requirements (clause 5.2) and information flow material (clauses 6.1.3.2.2, 6.1.3.3.2, 6.1.3.5.2, 6.1.3.6, 6.1.3.7.3, 6.1.3.8.2, 6.1.3.8.4, 6.1.3.10.3, 6.1.3.12) in this TR. Furthermore, it is recognized that extension of IUT and Collaborative Session capabilities to multiple IMS subscriptions introduces new requirements for authorization of service requests; the Collaboration Profile concept, as outlined in clause 6.1.4, describes one possible network-based means to satisfy these requirements.

The TR material as outlined above fulfils the requirement for IUT and Collaborative Session capabilities to be extended to multiple UEs belonging to different IMS subscriptions under the same operator. Hence, this capability shall be specified in normative release 10 specifications.

## 7.3 Conclusion on establishment of a Collaborative Session upon originating and terminating IMS session setup

This is a new IUT capability in Rel-10. The information flow material in clauses 6.1.3.2 and 6.1.3.3 fulfils the requirement for this capability both for UEs belonging to the same IMS subscription and UEs belonging to different IMS subscriptions under the same operator. This capability shall be specified in normative release 10 specifications.

## 7.4 Conclusion on control of media components of a Collaborative Session by more than one UE simultaneously

The requirement for multiple-UEs to be allowed to simultaneously control media components on another UE is fulfilled by: 1) the following principle from clause 6.1.1.1: "Any IUT capable UE can request IUT Media Control Related Procedures. Such requests are subject to authorization by the SCC AS and/or the Controller UE."; 2) select architectural requirements in clause 5.2; and 3) information flow material in clauses 6.1.3.5, 6.1.3.6.3 and 6.1.3.6.4 of this TR.

The TR material as outlined above fulfils the requirement for the multiple-UEs simultaneously controlling media components on another UE, and hence this capability shall be specified in normative release 10 specifications.

NOTE Development of a solution for multiple-UEs simultaneously controlling media components specific to Playback Control is beyond the scope of this TR for Rel-10.

## 7.5 Conclusion on transfer of control of a Collaborative Session

A solution for transfer of control of a Collaborative Session is included in the TR, but in Rel-10 such control transfer functionality is limited to UEs within a single IMS subscription and sharing the same service profile. Similarly, it is decided not to develop a solution for multiple-subscription IUT without establishing a Collaborative Session in Rel-10. The solution for both: a) multiple-subscription transfer of Collaborative Session Control; and b) multiple-subscription IUT without establishing a Collaborative Session; are regarded as being complex, and it is therefore concluded not to pursue a solution for these capabilities in Rel-10. Finally, it is recognized that there are no stage 1 requirements at present for the capability of transfer of Collaborative Session Control to a CS (ICS) UE that uses either the Gm or I1 reference point for network access signalling.

With the above qualifications, the information flow material in clause 6.1.3.4.1 fulfils the requirement for this capability and shall be specified in normative release 10 specifications.

## 7.6 Conclusion on media modification among UEs under different subscriptions

The information flow material in clause 6.1.3.12 fulfils the requirement for this capability and shall be specified in normative release 10 specifications.

## 7.7 Conclusion on IUT initiated by the target UE

The information flow material in clause 6.1.3.5 fulfils the requirement for this capability and shall be specified in normative release 10 specifications.

## 7.8 Conclusion on replication of an ongoing multimedia session from one UE on another UE

Replication of a media flow may be performed by either the remote party UE or by an element within the IMS core network (e.g., MRFC/MRFP). When a media flow is replicated by the remote party UE, the solution developed in this TR is to replicate an ongoing IMS session without establishing a Collaborative Session. When a media flow is replicated by an element within the IMS core network, Collaborative Session procedures are employed to accomplish the replication.

The information flow material in clauses 6.1.3.7 and 6.1.3.8 fulfils the requirement for this capability and shall be specified in normative release 10 specifications.

## Annex A (informative): Change History

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2009.11	SA2#76	S2-096752			TR Skeleton for SC IUT Enhancement		0.1.0
2009.11	SA2#76	S2-097178			Architecture Requirements for SC IUT Enhancement		0.1.0
2009.11	SA2#76	S2-097117			IUT between IMS UEs and CS UEs via ICS interworking entities		0.1.0
2009.11	SA2#76	S2-096753			TR Scope clause for SC IUT Enhancement		0.1.0
2009.11	SA2#76	S2-097118			Origination Scenario for SC IUT Enhancement		0.1.0
2009.11	SA2#76	S2-097120			Termination Scenario for SC IUT Enhancement		0.1.0
2009.11	SA2#76	S2-097122			Transferring Media scenario for SC IUT Enhancement		0.1.0
2009.11	SA2#76	S2-097123			Pulling Media scenario for SC IUT Enhancement		0.1.0
2009.11	SA2#76	S2-097127			Adding Media scenario for SC IUT Enhancement		0.1.0
2009.11	SA2#76	S2-097128			Deleting Media scenario for SC IUT Enhancement		0.1.0
2009.11	SA2#76	S2-097129			Modifying Media scenario for SC IUT Enhancement		0.1.0
2009.11	SA2#76	S2-097130			Replicating Media scenario for SC IUT Enhancement		0.1.0
2009.11	SA2#76	S2-097136			Architecture Reference Model for IUT SC Enhancement		0.1.0
2009.11	SA2#76	S2-096769			ongoing IMS multimedia sessions on different UEs		0.1.0
2009.11	SA2#76	S2-097132			Transfer of control of a Collaborative Session		0.1.0
2009.11	SA2#76	S2-097119			Information flows for Collaborative Session establishment at IMS originating session establishment		0.1.0
2009.11	SA2#76	S2-097179			Information flows for Collaborative Session establishment at IMS terminating session establishment		0.1.0
2009.11	SA2#76	S2-097458			Information flow for Controller UE transferring the Collaborative session control to a Controllee UE		0.1.0
2009.11	SA2#76	S2-097180			Information flow - Transfer of Collaborative Session Control		0.1.0
2009.11	SA2#76	S2-097124			Pull Mode for Inter UE Transfer		0.1.0
2009.11	SA2#76	S2-097131			Media Replication for Inter UE Transfer		0.1.0
2009.11	SA2#76				Editorial correction by rapporteur		0.1.0
2010.02	SA2#77	S2-100594			Updated IUT Scenarios		0.2.0
2010.02	SA2#77	S2-100595			Setting user authorisation and preferences		0.2.0
2010.02	SA2#77	S2-100642			Information Flow : Origination from Controller UE and Controllee UE belonging to same IMS subscription		0.2.0
2010.02	SA2#77	S2-100643			Information Flow : Termination to Controller UE and Controllee UE belonging to same IMS subscription		0.2.0
2010.02	SA2#77	S2-100633			IUT Session Discovery		0.2.0
2010.02	SA2#77	S2-100602			Signalling and Bearer Paths for SC IUT Enhancements		0.2.0
2010.02	SA2#77	S2-100634			Collaboration Profile for SC IUT Enhancement		0.2.0
2010.02	SA2#77	S2-100644			Information Flow ; Transferring media from Controller UE to Controllee UE belonging to different IMS subscriptions – push from Controller UE		0.2.0
2010.02	SA2#77	S2-100645			Information Flow : Transferring media from Controller UE to Controllee UE belonging to different IMS subscriptions – pull from Controller UE		0.2.0
2010.02	SA2#77	S2-100606			Controller UE and Controllee UE operations		0.2.0
2010.02	SA2#77	S2-100607			Information Flow : Pull mode IUT without prior information about the existing sessions		0.2.0
2010.02	SA2#77	S2-100608			Information Flow : Pull mode IUT		0.2.0
2010.02	SA2#77				Move information flows for scenarios 'Establishment of Collaborative Session upon originating/terminating IMS session setup: Controller UE and Controllee UE belong to same IMS subscription' from clause 6.2 Alternative 2 to 6.1 Alternative 1.		0.2.1
2010.03	SA2#78				Update information flow figures to align with editorial conventions used in TS 23.237 information flow figures for Inter-UE Transfer.		0.3.0
2010.03	SA2#78				Re-organize information flows within clause 6.1.3, creating new sub-clauses and: a) moving flow for scenario 'Transferring media from Controller UE to Controllee UE belonging to different IMS subscriptions – pull by Controllee UE from clause 6.1.3.5.4 in v0.2.1 to 6.1.3.4.2.1 in v0.3.0; and b) moving flow for scenario 'Transferring media from Controller UE to Controllee UE belonging to different IMS subscription – push from Controller UE from clause 6.1.3.9 in v0.2.1 to 6.1.3.5.1 in v0.3.0.		0.3.0
2010.03	SA2#78	S2-101238			Information Flow : Collaborative Session establishment upon originating IMS session setup: different IMS subscriptions		0.3.0
2010.03	SA2#78	S2-101264			Correction of information flows related to pull mode		0.3.0
2010.03	SA2#78	S2-101504			Clarification of authorization for Inter UE Transfer		0.3.0
2010.03	SA2#78	S2-101505			Criteria for routing incoming sessions to an IUT controller capable UE		0.3.0
2010.03	SA2#78	S2-101506			Restrictions on configurations of Collaborative Sessions across		0.3.0

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
					multiple subscriptions		
2010.03	SA2#78	S2-101527			Definition of multiple simultaneous controllers for Collaborative Sessions		0.3.0
2010.03	SA2#78	S2-101528			Resolution of editor's notes in information flows		0.3.0
2010.03	SA2#78	S2-101529			Information Flow : Collaborative Session establishment upon terminating IMS session setup: different IMS subscriptions		0.3.0
2010.03	SA2#78	S2-101530			Information Flow : Adding media from Controller UE to Controllee UE belonging to different IMS subscription		0.3.0
2010.03	SA2#78	S2-101531			Inter-UE Transfer replication clarification		0.3.0
2010.03	SA2#78	S2-101536			Information Flow : Replicating media from Controller UE to Controllee UE belonging to same IMS subscription – push mode		0.3.0
2010.03	SA2#78	S2-101537			Information Flow : Replicating media from Controller UE to Controllee UE belonging to different IMS subscription – push mode		0.3.0
2010.03	SA2#78	S2-101538			Information Flow : Replicating media from Controller UE to Controllee UE belonging to same IMS subscription – pull mode		0.3.0
2010.03	SA2#78	S2-101539			Information Flow : Replicating media from Controller UE to Controllee UE belonging to different IMS subscription – pull mode		0.3.0
2010.03	SA2#78	S2-101540			Information Flow : Pull mode media transfer from Controllee UE		0.3.0
2010.03	SA2#78				Correct the placement of Figures 6.1.3.1.1.1-1 and 6.1.3.2.1.1-1 with respect to the surrounding text.		0.3.1
2010.05					Change properties of the 'Change history' table such that the table may continue across multiple pages.		0.4.0
2010.05					Replace three erroneous specific figure references by the generic phrase "the figure below".		0.4.0
2010.05	SA2#79	S2-102948			Definitions and Requirements Update		0.4.0
2010.05	SA2#79	S2-102747			Roles of Controller UE and Controllee UE for enhanced IUT		0.4.0
2010.05	SA2#79	S2-102661			Scenario for IUT of an entire ongoing session without establishing collaborative session		0.4.0
2010.05	SA2#79	S2-102662			Solution for session control loss in a collaborative session		0.4.0
2010.05	SA2#79	S2-102665			Resolve miscellaneous editor's notes in TR 23.831		0.4.0
2010.05	SA2#79	S2-102748			IUT: requirement related to race condition resolution		0.4.0
2010.05	SA2#79	S2-102666			Annotating Information Flows that Assume a CS (ICS) UE May Control a Collaborative Session		0.4.0
2010.05	SA2#79	S2-102667			Pseudo-CR on "Updates to flows for transfer of collaborative session control"		0.4.0
2010.05	SA2#79	S2-102668			Pseudo-CR on "Correction to flows for inter-UE transfer of media initiated by target UE belonging to a subscription different from controller UE"		0.4.0
2010.05	SA2#79	S2-102670			Fixing the call flow in section 6.1.3.4.2.2		0.4.0
2010.05	SA2#79	S2-102749			Pseudo-CR on <Controllee initiated Transfer of media from Controllee UE to another Controllee UE>		0.4.0
2010.05	SA2#79	S2-102750			Pseudo-CR on <Controllee initiated Addition of media to another Controllee UE>		0.4.0
2010.05	SA2#79	S2-102949			Pseudo-CR on "Corrections to flows - media flow transfer initiated by the controller UE"		0.4.0
2010.05	SA2#79	S2-102674			Pseudo-CR on <Controller initiated Release of media from Controllee UE>		0.4.0
2010.05	SA2#79	S2-102675			Pseudo-CR on <Controller initiated Transfer of media from Controllee UE to another Controllee UE>		0.4.0
2010.05	SA2#79	S2-102676			Information flow for push mode session replication between UEs		0.4.0
2010.05	SA2#79	S2-102950			Pseudo-CR on "Correction to flows – Media flow replication by network"		0.4.0
2010.05	SA2#79	S2-102315			IUT between IMS UEs and CS UEs		0.4.0
2010.05	SA2#79	S2-102680			IUT: information flow for session discovery		0.4.0
2010.05	SA2#79	S2-102951			Media modification flows for UEs under different subscriptions		0.4.0
2010.05	SA2#79	S2-102682			Call flow for IUT initiated by source UE without establishing collaborative session – UEs in different subscriptions		0.4.0
2010.05	SA2#79	S2-102683			Call flow for IUT initiated by target UE without establishing collaborative session – UEs in different subscriptions		0.4.0
2010.05	SA2#79	S2-102554			Void clause for architectural Alternative 2		0.4.0
2010.05	SA2#79	S2-102664			Multiple SCC AS handling		0.4.0
2010.05	SA2#79	S2-102710			IUT: masking from session discovery		0.4.0
2010.05	SA2#79	S2-102553			Resolve editor's note in Collaboration Profile clause		0.4.0
2010.05	SA2#79	S2-102751			SCC AS initiated inter-UE transfer		0.4.0
2010.05	SA2#79	S2-102712			Conclusion on session discovery		0.4.0
2010.05	SA2#79	S2-102952			Corrections to flows "Collaborative session establishment at originating IMS session setup"		0.4.0
2010.05	SA2#79	S2-102953			Pseudo-CR on "Correction to flows – Establishment of collaborative session upon terminating session set up"		0.4.0
2010.05	SA2#79	S2-102715			Resolve editor's notes in TR 23.831 clauses 6.1.3.1.1.1 and 6.1.3.2.1.1		0.4.0



Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
06-2010	SP-48	SP-100354	-	-	MCC Update to version 1.0.0 for presentation to TSG SA for information	0.4.0	1.0.0
09-2010	SP-49	SP-100560	-	-	MCC Update to version 2.0.0 for presentation to TSG SA for Approval	1.1.0	2.0.0
09-2010	SP-49	-	-	-	MCC Update to version 10.0.0 after TSG SA Approval	2.0.0	10.0.0