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**Requirements for Floor Control Protocol**  
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Abstract

This document defines the requirements for floor control in a multi-party conference environment.

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## **1. Introduction**

Conference applications often have shared resources such as the right to talk, input access to a limited-bandwidth video channel, or a pointer or input focus in a shared application.

In many cases, it is desirable to be able to control who can provide input (send/write/control, depending on the application) to the shared resource.

Floor control enables applications or users to gain safe and mutually exclusive or non-exclusive input access to the shared object or resource. The floor is an individual temporary access or manipulation permission for a specific shared resource (or group of resources) [\[7\]](#).

Floor control is an optional feature for conferencing applications. SIP [\[2\]](#) conferencing applications may also decide not to support this feature at all. Two-party applications may use floor control outside conferencing, although the usefulness of this kind of scenario is limited. Floor control may be used together with conference policy control protocol (CPCP) [\[8\]](#), or it may be used as standalone separate protocol, e.g. with SIP but without CPCP.

Floor control has been studied extensively over the years, (e.g. [\[9\]](#), [\[7\]](#), [\[6\]](#)) therefore earlier work can be utilized here.

This document can be used with other documents, such as Conferencing framework document [\[3\]](#).



## **2. Conventions Used in This Document**

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#).

### **3. Terminology**

This document uses the definitions from [\[3\]](#).

Additional definitions:

Floor: A permission to temporarily access or manipulate a specific shared resource or set of resources.

Conference owner: A privileged user who controls the conference, creates floors and assigns and deassigns floor chairs. The conference owner does not have to be a member in a conference.

Floor chair: A user (or an entity) who manages one floor (grants, denies or revokes a floor). The floor chair does not have to be a member in a conference.

Floor control: A mechanism that enables applications or users to gain safe and mutually exclusive or non-exclusive input access to the shared object or resource.





#### **4. Model**

A floor control protocol is used to convey the floor control messages among the floor chairs (moderators) of the conference, the floor control server and the participants of the conference. A centralized architecture is assumed in which all messages go via one point.

The centralized conference server controls the floors at least in the signaling level. Controlling also the actual (physical) media resources (e.g. audio mixer) is highly recommended, but beyond the scope of this document.

Note that the floor is a concept coupled with one or more media streams. The creation of the media session itself is defined elsewhere. A participant with appropriate privileges may create a floor by defining that one or more existing media sessions are now floor- controlled, and appoint a floor chair.



## 5. Integration with Conferencing

Floor control itself does not support privileges such as handing over chair privileges to another users (or taking them away). Instead, some external mechanism, such as conference management (e.g. CPCP or internal web-interface for policy manipulation) is used for that.

The conference policy (and conference owner or creator) defines whether floor control is in use or not. Actually enforcing conference media distribution in line with the respective media's floor status (e.g. controlling an audio bridge) is beyond the scope of this document. Floor control itself does not define media enforcement. It is also the conference policy that defines which media streams may be used in a conference and which ones are floor controlled.

Typically, the conference owner creates the floor(s) using conference policy control protocol (or some other mechanism) and appoints the floor chair. The conference owner can remove the floor anytime (so that a media session is not floor-controlled anymore) or change floor chair or floor parameters.

The floor chair just controls the access to the floor(s), according to the conference policy.

A floor control server is a separate logical entity, typically co-located with focus and conference policy server. Therefore, communication mechanisms between floor control server and other central conferencing entities are not defined at this point.



## 6. Requirements

REQ-1: It MUST be possible to announce to participants that a particular media session (or group of media sessions) is floor-controlled and where requests for the floor should be addressed to.

(This is a requirement for session protocol, i.e. SIP. SDP's "a" line offers one possible indication.)

REQ-2: It MUST be possible to group several media sessions together so that one floor applies to the group.

(The SDP "fid" extension may serve this purpose.)

REQ-3: It MUST be possible to define who is allowed to create, change and remove a floor in a conference. We assume that the conference owner always has this privilege and may also authorize other entities, via the conference policy.

REQ-4: It MUST be possible to use a chair-controlled floor policy in which the floor controller notifies the floor chair and waits for the chair to make a decision. This enables the chair to fully control who has the floor. The server MAY forward all requests immediately to chair, or it may do filtering and send only occasional notifications to the chair.

REQ-5: Participants MUST be able to request (claim) a floor and give additional information about the request, such as the topic of the question for an audio floor.

REQ-6: A floor holder MUST be able to release a floor.

REQ-7: The chair or controller MUST be able to revoke a floor from its current holder.

REQ-8: It MUST be possible to grant a floor to a participant.

REQ-9: It MUST be possible to get and set at least the following floor parameters:

- who is floor control chair (this does not have to be the conference owner);
- whether "no floor control" is applied (free for all policy)
- what is the floor control policy (such as chair-controlled, first-come first-served, random);



- the number of simultaneous floor holders.

REQ-10: Floor policies MAY support time limits that automatically pass the floor (e.g. to the next-in-line) or revoke the floor after a preset time interval.

REQ-11: It MUST be possible for a user with appropriate conference privileges to change the chair for a floor.

REQ-12: Bandwidth and terminal limitations SHOULD be taken into account in order to ensure that floor control can be efficiently used in mobile environments.

REQ-13: Conference members and the chair MUST have the capability to learn who has the floor and who has requested the floor. (Note: Conference policy may prevent members seeing this.)

REQ-14: It MUST be possible to notify conference members and chair about the floorholder changes and when a new floor request is being made. (Note: Conference policy may prevent members seeing this.)





## **7. Open Issues**

- support for privacy, e.g. the following: floor claimer must be able to indicate privacy preference, and the ability to hide floor chair's identity

Preliminary proposal:

RRQ-a: It MUST be possible for the floor requester to indicate her privacy preference. The privacy preferences MUST include the following options:

anonymous: the participants (including the floor chair) cannot see the floor requester's identity. The floor chair grant the floor based on the claim id and the topic of the claim.

known to the floor chair: only the floor chair is able to see the floor requester's identity; all other participants do not obtain this information.

public: all the participants can see the floor requester's identity.

RRQ-b: It MUST be possible to hide the identity of a floor chair from a subset or all participants of a conference.



## **8. Acknowledgements**

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