OIPF DAE V2.1 Class Diagrams

OIPF-T1-R2-Specification-Volume-5-Declarative-Application-Environment-v2_1-2011-06-21

HUMAX IP Media SW1T
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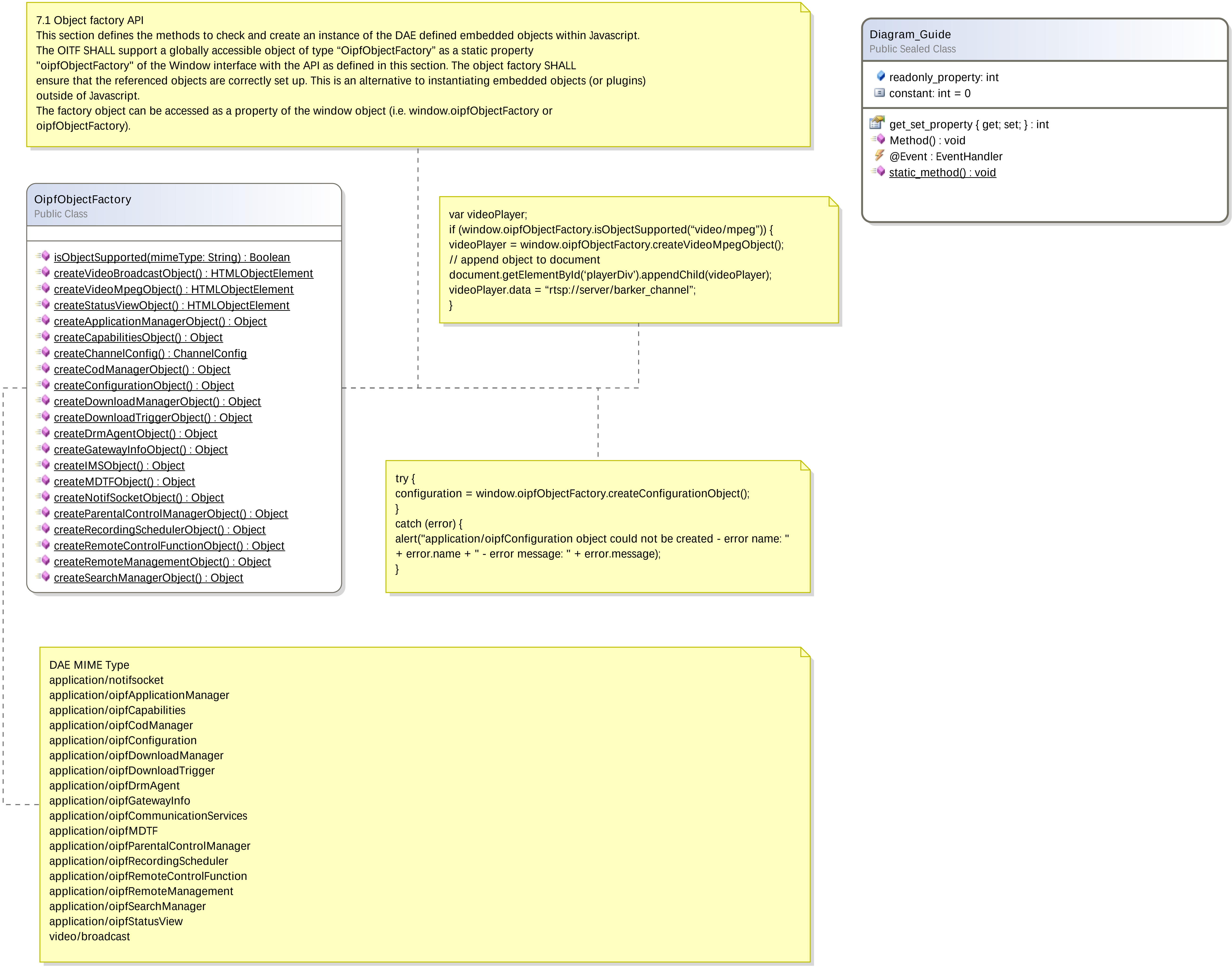


7.1 Object factory API

This section defines the methods to check and create an instance of the DAE defined embedded objects within Javascript.

The OITF SHALL support a globally accessible object of type “OipfObjectFactory” as a static property "oipfObjectFactory" of the Window interface with the API as defined in this section. The object factory SHALL ensure that the referenced objects are correctly set up. This is an alternative to instantiating embedded objects (or plugins) outside of Javascript.

The factory object can be accessed as a property of the window object (i.e. window.oipfObjectFactory or oipfObjectFactory).

Diagram_Guide

Public Sealed Class

- readonly_property: int
- constant: int = 0
- get_set_property { get; set; } : int
- Method() : void
- @Event : EventHandler
- static_method() : void

OipfObjectFactory

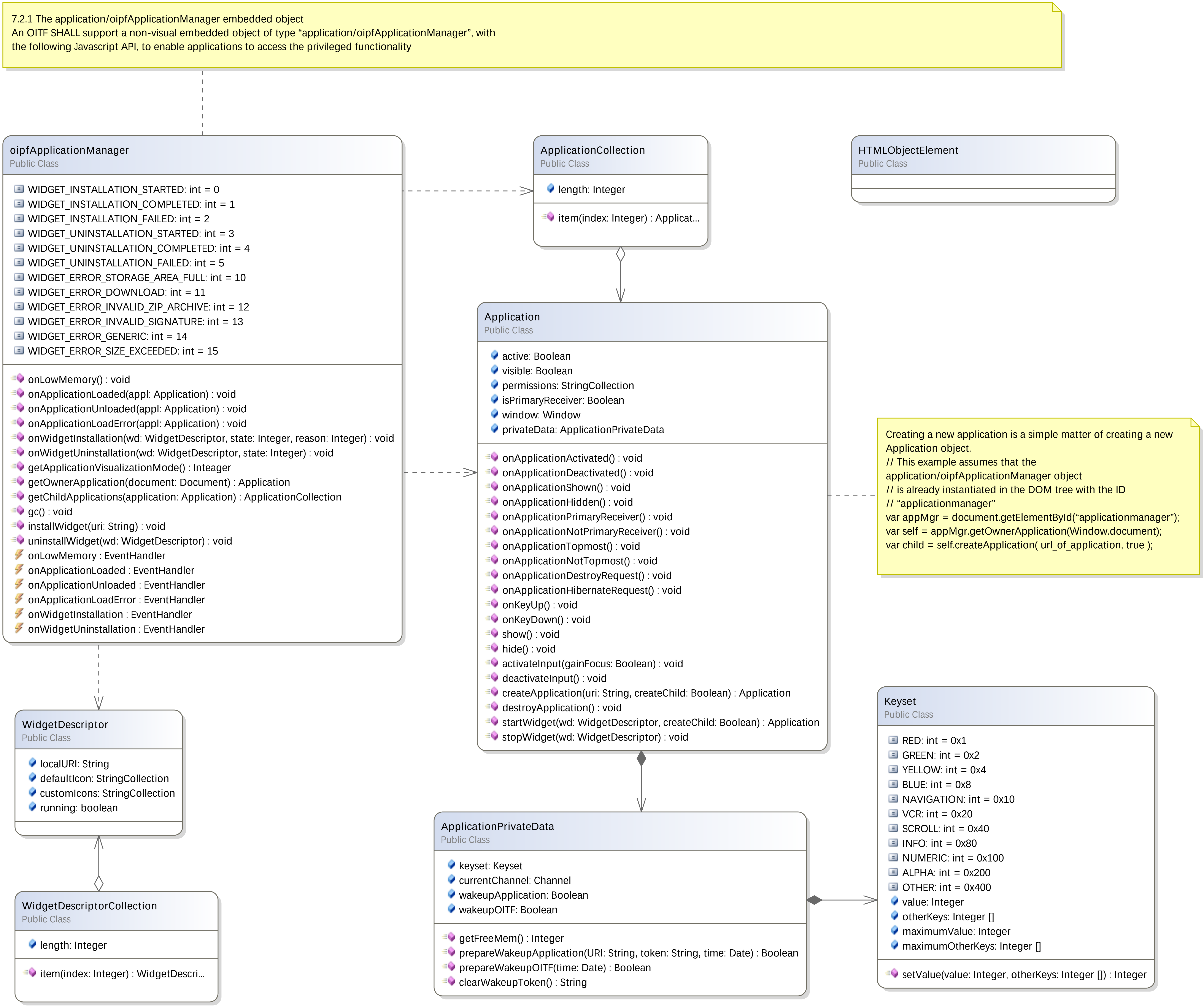
Public Class

- isObjectSupported(mimeType: String) : Boolean
- createVideoBroadcastObject() : HTMLObjectElement
- createVideoMpegObject() : HTMLObjectElement
- createStatusViewObject() : HTMLObjectElement
- createApplicationManagerObject() : Object
- createCapabilitiesObject() : Object
- createChannelConfig() : ChannelConfig
- createCodManagerObject() : Object
- createConfigurationObject() : Object
- createDownloadManagerObject() : Object
- createDownloadTriggerObject() : Object
- createDrmAgentObject() : Object
- createGatewayInfoObject() : Object
- createIMSObject() : Object
- createMDTFObject() : Object
- createNotifSocketObject() : Object
- createParentalControlManagerObject() : Object
- createRecordingSchedulerObject() : Object
- createRemoteControlFunctionObject() : Object
- createRemoteManagementObject() : Object
- createSearchManagerObject() : Object

```
var videoPlayer;
if (window.oipfObjectFactory.isObjectSupported(“video/mpeg”)) {
videoPlayer = window.oipfObjectFactory.createVideoMpegObject();
// append object to document
document.getElementById(‘playerDiv’).appendChild(videoPlayer);
videoPlayer.data = “rtsp://server/barker_channel”;
}
```

```
try {
configuration = window.oipfObjectFactory.createConfigurationObject();
}
catch (error) {
alert("application/oipfConfiguration object could not be created - error name: "
+ error.name + " - error message: " + error.message);
}
```

DAE MIME Type
application/notifsocket
application/oipfApplicationManager
application/oipfCapabilities
application/oipfCodManager
application/oipfConfiguration
application/oipfDownloadManager
application/oipfDownloadTrigger
application/oipfDrmAgent
application/oipfGatewayInfo
application/oipfCommunicationServices
application/oipfMDTF
application/oipfParentalControlManager
application/oipfRecordingScheduler
application/oipfRemoteControlFunction
application/oipfRemoteManagement
application/oipfSearchManager
application/oipfStatusView
video/broadcast



7.2.1 The application/oipfApplicationManager embedded object
An OITF SHALL support a non-visual embedded object of type “application/oipfApplicationManager”, with the following Javascript API, to enable applications to access the privileged functionality

oipfApplicationManager
Public Class

- WIDGET_INSTALLATION_STARTED: int = 0
- WIDGET_INSTALLATION_COMPLETED: int = 1
- WIDGET_INSTALLATION_FAILED: int = 2
- WIDGET_UNINSTALLATION_STARTED: int = 3
- WIDGET_UNINSTALLATION_COMPLETED: int = 4
- WIDGET_UNINSTALLATION_FAILED: int = 5
- WIDGET_ERROR_STORAGE_AREA_FULL: int = 10
- WIDGET_ERROR_DOWNLOAD: int = 11
- WIDGET_ERROR_INVALID_ZIP_ARCHIVE: int = 12
- WIDGET_ERROR_INVALID_SIGNATURE: int = 13
- WIDGET_ERROR_GENERIC: int = 14
- WIDGET_ERROR_SIZE_EXCEEDED: int = 15

- onLowMemory() : void
- onApplicationLoaded(appl: Application) : void
- onApplicationUnloaded(appl: Application) : void
- onApplicationLoadError(appl: Application) : void
- onWidgetInstallation(wd: WidgetDescriptor, state: Integer, reason: Integer) : void
- onWidgetUninstallation(wd: WidgetDescriptor, state: Integer) : void
- getApplicationVisualizationMode() : Integer
- getOwnerApplication(document: Document) : Application
- getChildApplications(application: Application) : ApplicationCollection
- gc() : void
- installWidget(uri: String) : void
- uninstallWidget(wd: WidgetDescriptor) : void
- onLowMemory : EventHandler
- onApplicationLoaded : EventHandler
- onApplicationUnloaded : EventHandler
- onApplicationLoadError : EventHandler
- onWidgetInstallation : EventHandler
- onWidgetUninstallation : EventHandler

ApplicationCollection
Public Class

- length: Integer

- item(index: Integer) : Applicat...

HTMLObjectElement
Public Class

Application
Public Class

- active: Boolean
- visible: Boolean
- permissions: StringCollection
- isPrimaryReceiver: Boolean
- window: Window
- privateData: ApplicationPrivateData

- onApplicationActivated() : void
- onApplicationDeactivated() : void
- onApplicationShown() : void
- onApplicationHidden() : void
- onApplicationPrimaryReceiver() : void
- onApplicationNotPrimaryReceiver() : void
- onApplicationTopmost() : void
- onApplicationNotTopmost() : void
- onApplicationDestroyRequest() : void
- onApplicationHibernateRequest() : void
- onKeyUp() : void
- onKeyDown() : void
- show() : void
- hide() : void
- activateInput(gainFocus: Boolean) : void
- deactivateInput() : void
- createApplication(uri: String, createChild: Boolean) : Application
- destroyApplication() : void
- startWidget(wd: WidgetDescriptor, createChild: Boolean) : Application
- stopWidget(wd: WidgetDescriptor) : void

Creating a new application is a simple matter of creating a new Application object.
// This example assumes that the application/oipfApplicationManager object
// is already instantiated in the DOM tree with the ID
// “applicationmanager”
var appMgr = document.getElementById(“applicationmanager”);
var self = appMgr.getOwnerApplication(Window.document);
var child = self.createApplication(url_of_application, true);

WidgetDescriptor
Public Class

- localURI: String
- defaultIcon: StringCollection
- customIcons: StringCollection
- running: boolean

WidgetDescriptorCollection
Public Class

- length: Integer

- item(index: Integer) : WidgetDescri...

ApplicationPrivateData
Public Class

- keyset: Keyset
- currentChannel: Channel
- wakeupApplication: Boolean
- wakeupOITF: Boolean

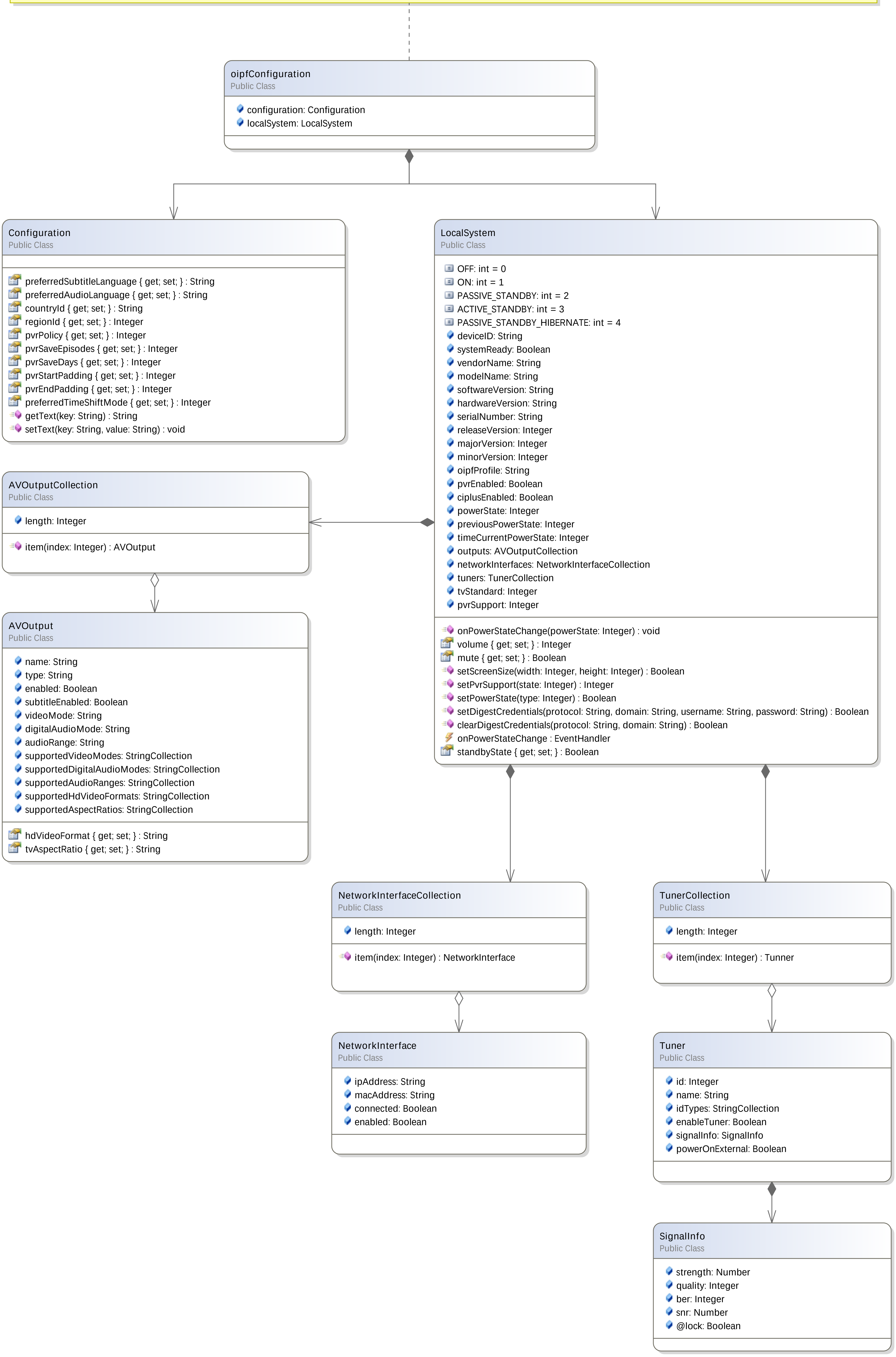
- getFreeMem() : Integer
- prepareWakeupApplication(URI: String, token: String, time: Date) : Boolean
- prepareWakeupOITF(time: Date) : Boolean
- clearWakeupToken() : String

Keyset
Public Class

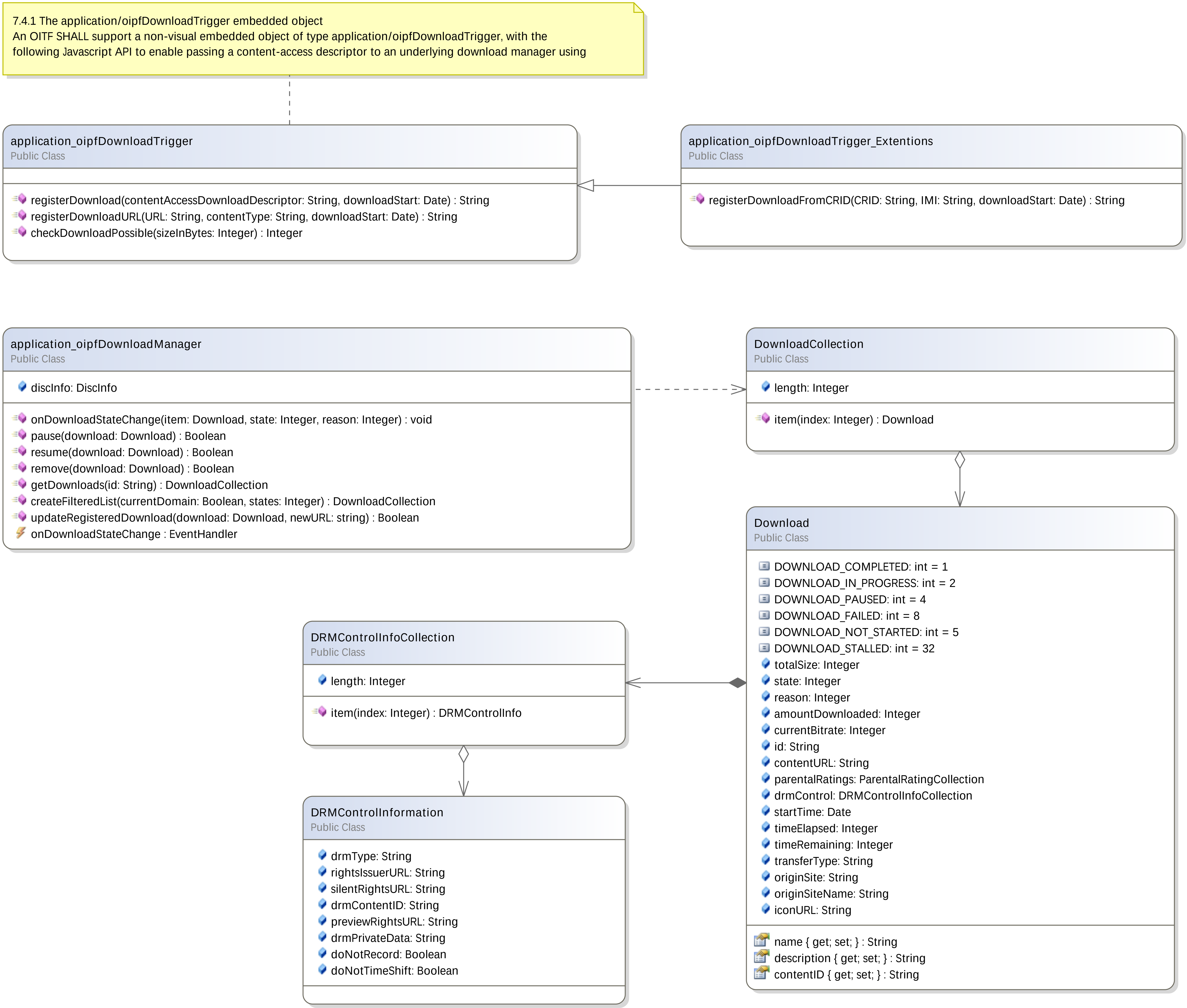
- RED: int = 0x1
- GREEN: int = 0x2
- YELLOW: int = 0x4
- BLUE: int = 0x8
- NAVIGATION: int = 0x10
- VCR: int = 0x20
- SCROLL: int = 0x40
- INFO: int = 0x80
- NUMERIC: int = 0x100
- ALPHA: int = 0x200
- OTHER: int = 0x400
- value: Integer
- otherKeys: Integer []
- maximumValue: Integer
- maximumOtherKeys: Integer []

- setValue(value: Integer, otherKeys: Integer []) : Integer

7.3.1 The application/oipfConfiguration embedded object
The OITF SHALL implement the “application/oipfConfiguration” object as defined below. This object provides an interface to the configuration and user settings facilities within the OITF.

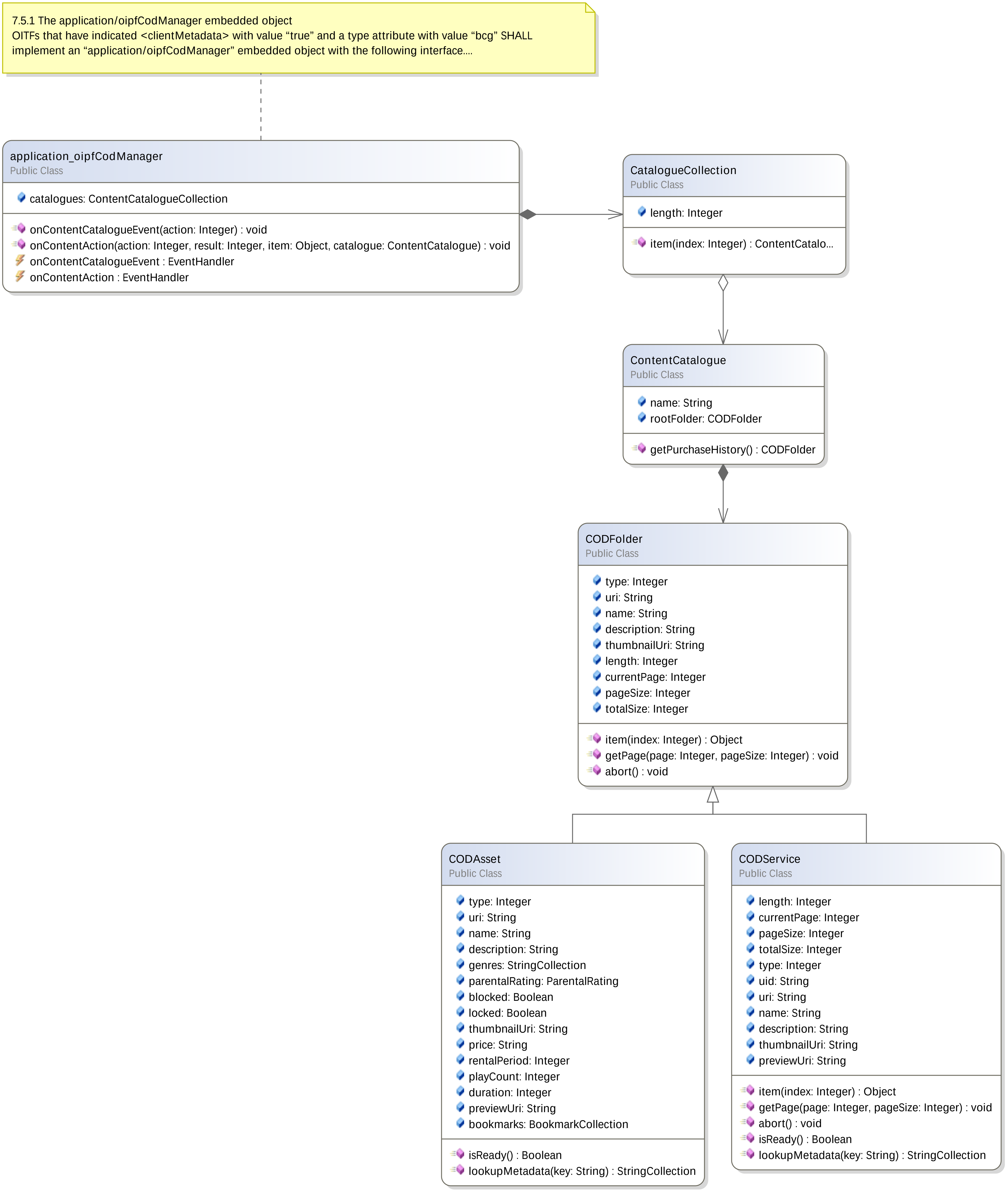


oipfConfiguration
Public Class
configuration: Configuration
localSystem: LocalSystem
Configuration
Public Class
preferredSubtitleLanguage { get; set; } : String
preferredAudioLanguage { get; set; } : String
countryId { get; set; } : String
regionId { get; set; } : Integer
pvrPolicy { get; set; } : Integer
pvrSaveEpisodes { get; set; } : Integer
pvrSaveDays { get; set; } : Integer
pvrStartPadding { get; set; } : Integer
pvrEndPadding { get; set; } : Integer
preferredTimeShiftMode { get; set; } : Integer
getText(key: String) : String
setText(key: String, value: String) : void
LocalSystem
Public Class
OFF: int = 0
ON: int = 1
PASSIVE_STANDBY: int = 2
ACTIVE_STANDBY: int = 3
PASSIVE_STANDBY_HIBERNATE: int = 4
deviceID: String
systemReady: Boolean
vendorName: String
modelName: String
softwareVersion: String
hardwareVersion: String
serialNumber: String
releaseVersion: Integer
majorVersion: Integer
minorVersion: Integer
oipfProfile: String
pvrEnabled: Boolean
ciplusEnabled: Boolean
powerState: Integer
previousPowerState: Integer
timeCurrentPowerState: Integer
outputs: AVOutputCollection
networkInterfaces: NetworkInterfaceCollection
tuners: TunerCollection
tvStandard: Integer
pvrSupport: Integer
onPowerStateChange(powerState: Integer) : void
volume { get; set; } : Integer
mute { get; set; } : Boolean
setScreenSize(width: Integer, height: Integer) : Boolean
setPvrSupport(state: Integer) : Integer
setPowerState(type: Integer) : Boolean
setDigestCredentials(protocol: String, domain: String, username: String, password: String) : Boolean
clearDigestCredentials(protocol: String, domain: String) : Boolean
onPowerStateChange : EventHandler
standbyState { get; set; } : Boolean
AVOutputCollection
Public Class
length: Integer
item(index: Integer) : AVOutput
AVOutput
Public Class
name: String
type: String
enabled: Boolean
subtitleEnabled: Boolean
videoMode: String
digitalAudioMode: String
audioRange: String
supportedVideoModes: StringCollection
supportedDigitalAudioModes: StringCollection
supportedAudioRanges: StringCollection
supportedHdVideoFormats: StringCollection
supportedAspectRatios: StringCollection
hdVideoFormat { get; set; } : String
tvAspectRatio { get; set; } : String
NetworkInterfaceCollection
Public Class
length: Integer
item(index: Integer) : NetworkInterface
TunerCollection
Public Class
length: Integer
item(index: Integer) : Tunner
NetworkInterface
Public Class
ipAddress: String
macAddress: String
connected: Boolean
enabled: Boolean
Tuner
Public Class
id: Integer
name: String
idTypes: StringCollection
enableTuner: Boolean
signalInfo: SignalInfo
powerOnExternal: Boolean
SignalInfo
Public Class
strength: Number
quality: Integer
ber: Integer
snr: Number
@lock: Boolean

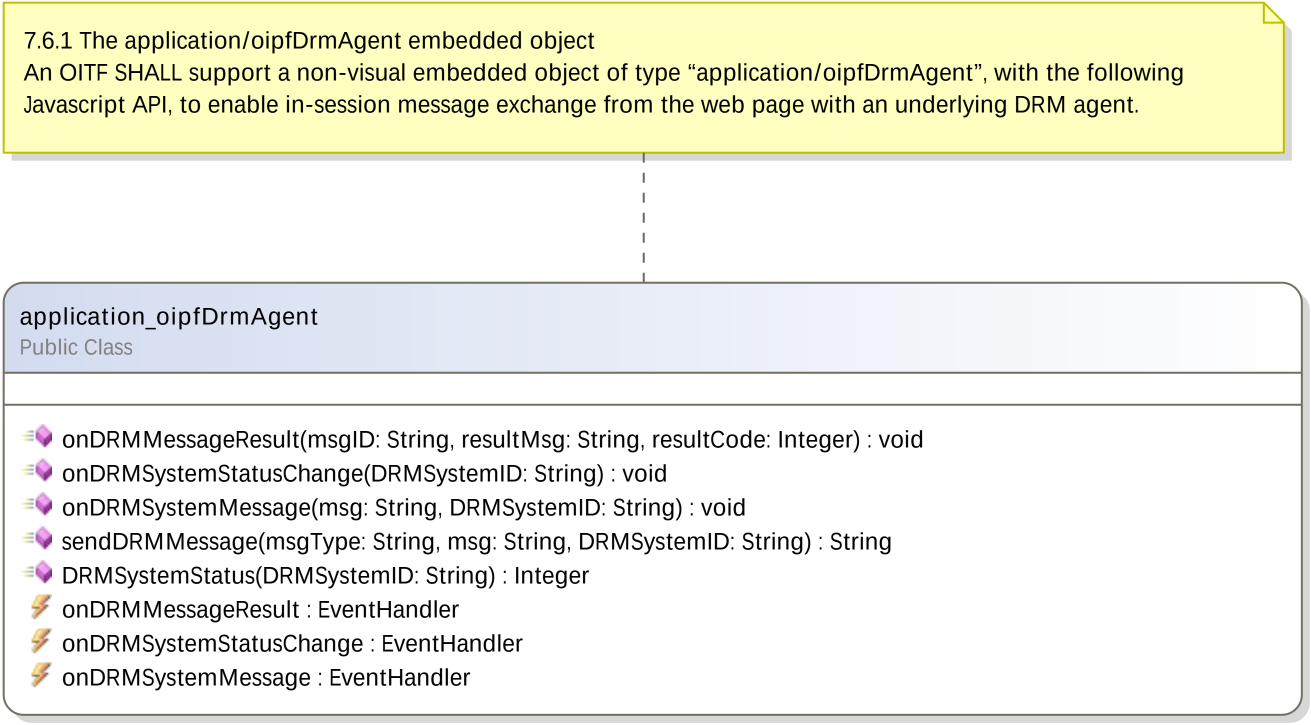


7.4.1 The application/oipfDownloadTrigger embedded object
An OITF SHALL support a non-visual embedded object of type application/oipfDownloadTrigger, with the following Javascript API to enable passing a content-access descriptor to an underlying download manager using

application_oipfDownloadTrigger
Public Class
registerDownload(contentAccessDownloadDescriptor: String, downloadStart: Date) : String
registerDownloadURL(URL: String, contentType: String, downloadStart: Date) : String
checkDownloadPossible(sizeInBytes: Integer) : Integer
application_oipfDownloadTrigger_Extentions
Public Class
registerDownloadFromCRID(CRID: String, IMI: String, downloadStart: Date) : String
application_oipfDownloadManager
Public Class
discInfo: DiscInfo
onDownloadStateChange(item: Download, state: Integer, reason: Integer) : void
pause(download: Download) : Boolean
resume(download: Download) : Boolean
remove(download: Download) : Boolean
getDownloads(id: String) : DownloadCollection
createFilteredList(currentDomain: Boolean, states: Integer) : DownloadCollection
updateRegisteredDownload(download: Download, newURL: string) : Boolean
onDownloadStateChange : EventHandler
DownloadCollection
Public Class
length: Integer
item(index: Integer) : Download
Download
Public Class
DOWNLOAD_COMPLETED: int = 1
DOWNLOAD_IN_PROGRESS: int = 2
DOWNLOAD_PAUSED: int = 4
DOWNLOAD_FAILED: int = 8
DOWNLOAD_NOT_STARTED: int = 5
DOWNLOAD_STALLED: int = 32
totalSize: Integer
state: Integer
reason: Integer
amountDownloaded: Integer
currentBitrate: Integer
id: String
contentURL: String
parentalRatings: ParentalRatingCollection
drmControl: DRMControlInfoCollection
startTime: Date
timeElapsed: Integer
timeRemaining: Integer
transferType: String
originSite: String
originSiteName: String
iconURL: String
name { get; set; } : String
description { get; set; } : String
contentID { get; set; } : String
DRMControlInfoCollection
Public Class
length: Integer
item(index: Integer) : DRMControlInfo
DRMControlInformation
Public Class
drmType: String
rightsIssuerURL: String
silentRightsURL: String
drmContentID: String
previewRightsURL: String
drmPrivateData: String
doNotRecord: Boolean
doNotTimeShift: Boolean



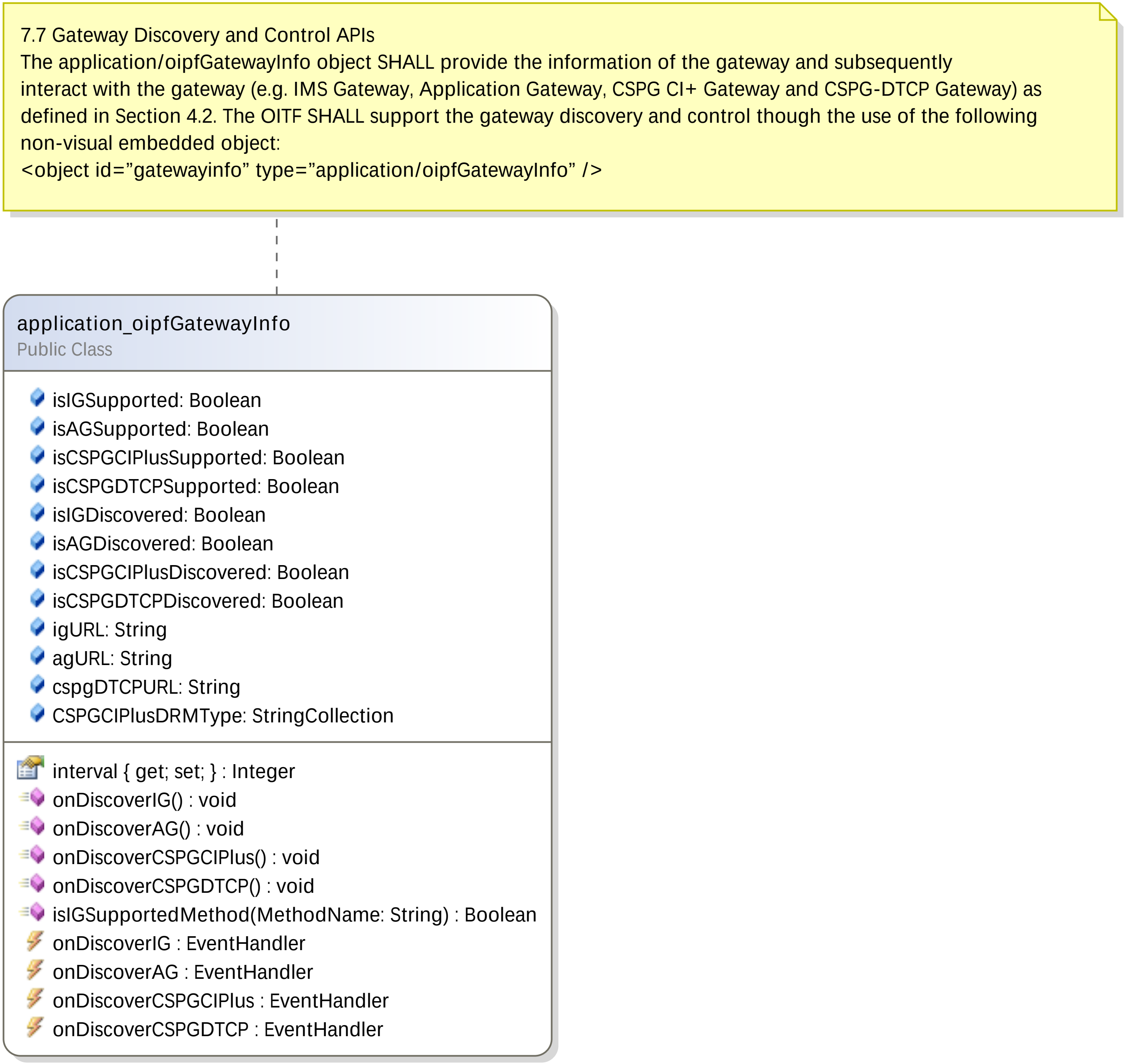
7.5.1 The application/oipfCodManager embedded object
OITFs that have indicated <clientMetadata> with value “true” and a type attribute with value “bcg” SHALL implement an “application/oipfCodManager” embedded object with the following interface....



7.6.1 The application/oipfDrmAgent embedded object
An OITF SHALL support a non-visual embedded object of type “application/oipfDrmAgent”, with the following Javascript API, to enable in-session message exchange from the web page with an underlying DRM agent.

application_oipfDrmAgent
Public Class

- onDRMMessageResult(msgID: String, resultMsg: String, resultCode: Integer) : void
- onDRMSystemStatusChange(DRMSystemID: String) : void
- onDRMSystemMessage(msg: String, DRMSystemID: String) : void
- sendDRMMessage(msgType: String, msg: String, DRMSystemID: String) : String
- DRMSystemStatus(DRMSystemID: String) : Integer
- onDRMMessageResult : EventHandler
- onDRMSystemStatusChange : EventHandler
- onDRMSystemMessage : EventHandler

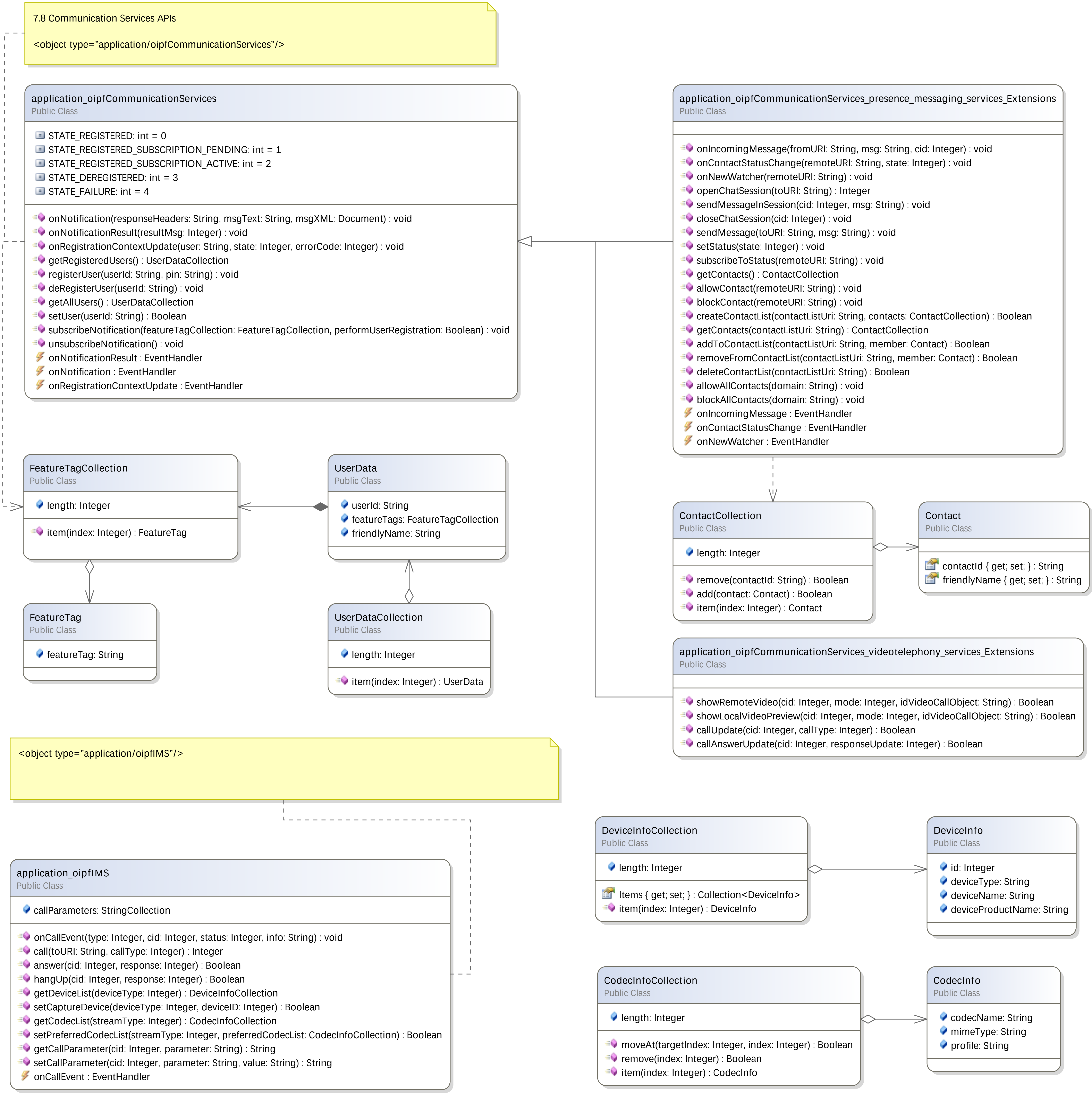


7.7 Gateway Discovery and Control APIs
The application/oipfGatewayInfo object SHALL provide the information of the gateway and subsequently interact with the gateway (e.g. IMS Gateway, Application Gateway, CSPG CI+ Gateway and CSPG-DTCP Gateway) as defined in Section 4.2. The OITF SHALL support the gateway discovery and control though the use of the following non-visual embedded object:
<object id=”gatewayinfo” type=”application/oipfGatewayInfo” />

application_oipfGatewayInfo
Public Class

- isIGSupported: Boolean
- isAGSupported: Boolean
- isCSPGCIPlusSupported: Boolean
- isCSPGDTCPSupported: Boolean
- isIGDiscovered: Boolean
- isAGDiscovered: Boolean
- isCSPGCIPlusDiscovered: Boolean
- isCSPGDTCPDiscovered: Boolean
- igURL: String
- agURL: String
- cspgDTCPURL: String
- CSPGCIPlusDRMType: StringCollection

- interval { get; set; } : Integer
- onDiscoverIG() : void
- onDiscoverAG() : void
- onDiscoverCSPGCIPlus() : void
- onDiscoverCSPGDTCP() : void
- isIGSupportedMethod(MethodName: String) : Boolean
- onDiscoverIG : EventHandler
- onDiscoverAG : EventHandler
- onDiscoverCSPGCIPlus : EventHandler
- onDiscoverCSPGDTCP : EventHandler



7.8 Communication Services APIs

<object type="application/oipfCommunicationServices"/>

application_oipfCommunicationServices
Public Class

- STATE_REGISTERED: int = 0
- STATE_REGISTERED_SUBSCRIPTION_PENDING: int = 1
- STATE_REGISTERED_SUBSCRIPTION_ACTIVE: int = 2
- STATE_DEREGISTERED: int = 3
- STATE_FAILURE: int = 4

- onNotification(responseHeaders: String, msgText: String, msgXML: Document) : void
- onNotificationResult(resultMsg: Integer) : void
- onRegistrationContextUpdate(user: String, state: Integer, errorCode: Integer) : void
- getRegisteredUsers() : UserDataCollection
- registerUser(userId: String, pin: String) : void
- deRegisterUser(userId: String) : void
- getAllUsers() : UserDataCollection
- setUser(userId: String) : Boolean
- subscribeNotification(featureTagCollection: FeatureTagCollection, performUserRegistration: Boolean) : void
- unsubscribeNotification() : void
- onNotificationResult : EventHandler
- onNotification : EventHandler
- onRegistrationContextUpdate : EventHandler

application_oipfCommunicationServices_presence_messaging_services_Extensions
Public Class

- onIncomingMessage(fromURI: String, msg: String, cid: Integer) : void
- onContactStatusChange(remoteURI: String, state: Integer) : void
- onNewWatcher(remoteURI: String) : void
- openChatSession(toURI: String) : Integer
- sendMessageInSession(cid: Integer, msg: String) : void
- closeChatSession(cid: Integer) : void
- sendMessage(toURI: String, msg: String) : void
- setStatus(state: Integer) : void
- subscribeToStatus(remoteURI: String) : void
- getContacts() : ContactCollection
- allowContact(remoteURI: String) : void
- blockContact(remoteURI: String) : void
- createContactList(contactListUri: String, contacts: ContactCollection) : Boolean
- getContacts(contactListUri: String) : ContactCollection
- addToContactList(contactListUri: String, member: Contact) : Boolean
- removeFromContactList(contactListUri: String, member: Contact) : Boolean
- deleteContactList(contactListUri: String) : Boolean
- allowAllContacts(domain: String) : void
- blockAllContacts(domain: String) : void
- onIncomingMessage : EventHandler
- onContactStatusChange : EventHandler
- onNewWatcher : EventHandler

FeatureTagCollection
Public Class

- length: Integer

- item(index: Integer) : FeatureTag

UserData
Public Class

- userId: String
- featureTags: FeatureTagCollection
- friendlyName: String

ContactCollection
Public Class

- length: Integer

- remove(contactId: String) : Boolean
- add(contact: Contact) : Boolean
- item(index: Integer) : Contact

Contact
Public Class

- contactId { get; set; } : String
- friendlyName { get; set; } : String

FeatureTag
Public Class

- featureTag: String

UserDataCollection
Public Class

- length: Integer

- item(index: Integer) : UserData

application_oipfCommunicationServices_videotelephony_services_Extensions
Public Class

- showRemoteVideo(cid: Integer, mode: Integer, idVideoCallObject: String) : Boolean
- showLocalVideoPreview(cid: Integer, mode: Integer, idVideoCallObject: String) : Boolean
- callUpdate(cid: Integer, callType: Integer) : Boolean
- callAnswerUpdate(cid: Integer, responseUpdate: Integer) : Boolean

<object type="application/oipfIMS"/>

DeviceInfoCollection
Public Class

- length: Integer

- Items { get; set; } : Collection<DeviceInfo>
- item(index: Integer) : DeviceInfo

DeviceInfo
Public Class

- id: Integer
- deviceType: String
- deviceName: String
- deviceProductName: String

application_oipfIMS
Public Class

- callParameters: StringCollection

- onCallEvent(type: Integer, cid: Integer, status: Integer, info: String) : void
- call(toURI: String, callType: Integer) : Integer
- answer(cid: Integer, response: Integer) : Boolean
- hangUp(cid: Integer, response: Integer) : Boolean
- getDeviceList(deviceType: Integer) : DeviceInfoCollection
- setCaptureDevice(deviceType: Integer, deviceID: Integer) : Boolean
- getCodecList(streamType: Integer) : CodecInfoCollection
- setPreferredCodecList(streamType: Integer, preferredCodecList: CodecInfoCollection) : Boolean
- getCallParameter(cid: Integer, parameter: String) : String
- setCallParameter(cid: Integer, parameter: String, value: String) : String
- onCallEvent : EventHandler

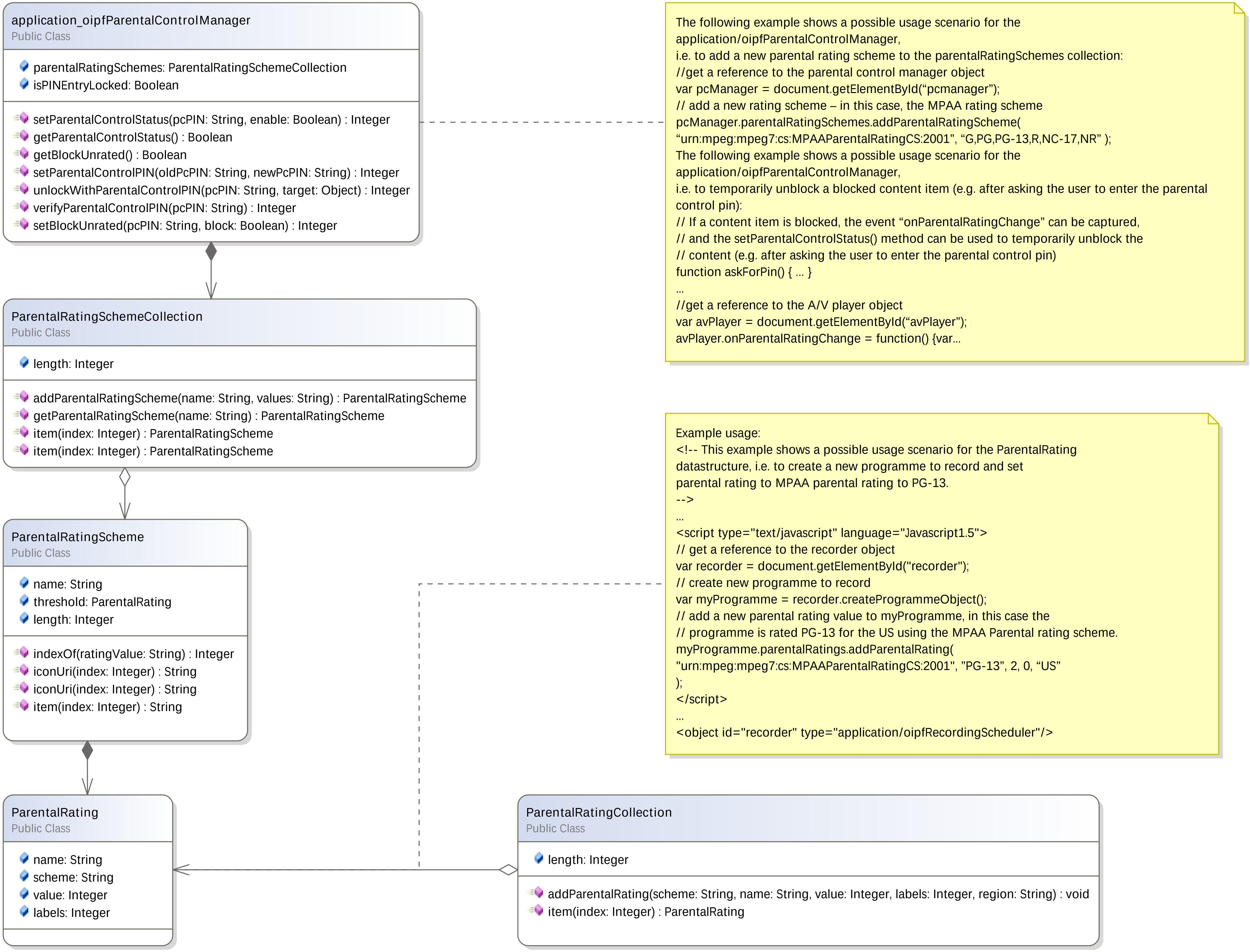
CodecInfoCollection
Public Class

- length: Integer

- moveAt(targetIndex: Integer, index: Integer) : Boolean
- remove(index: Integer) : Boolean
- item(index: Integer) : CodecInfo

CodecInfo
Public Class

- codecName: String
- mimeType: String
- profile: String



application_oipfParentalControlManager
Public Class

parentalRatingSchemes: ParentalRatingSchemeCollection
isPINEntryLocked: Boolean

setParentalControlStatus(pcPIN: String, enable: Boolean) : Integer
getParentalControlStatus() : Boolean
getBlockUnrated() : Boolean
setParentalControlPIN(oldPcPIN: String, newPcPIN: String) : Integer
unlockWithParentalControlPIN(pcPIN: String, target: Object) : Integer
verifyParentalControlPIN(pcPIN: String) : Integer
setBlockUnrated(pcPIN: String, block: Boolean) : Integer

```
The following example shows a possible usage scenario for the
application/oipfParentalControlManager,
i.e. to add a new parental rating scheme to the parentalRatingSchemes collection:
//get a reference to the parental control manager object
var pcManager = document.getElementById(“pcmanager”);
// add a new rating scheme – in this case, the MPAA rating scheme
pcManager.parentalRatingSchemes.addParentalRatingScheme(
“urn:mpeg:mpeg7:cs:MPAAParentalRatingCS:2001”, “G,PG,PG-13,R,NC-17,NR” );
The following example shows a possible usage scenario for the
application/oipfParentalControlManager,
i.e. to temporarily unblock a blocked content item (e.g. after asking the user to enter the parental
control pin):
// If a content item is blocked, the event “onParentalRatingChange” can be captured,
// and the setParentalControlStatus() method can be used to temporarily unblock the
// content (e.g. after asking the user to enter the parental control pin)
function askForPin() { ... }
...
//get a reference to the A/V player object
var avPlayer = document.getElementById(“avPlayer”);
avPlayer.onParentalRatingChange = function() {var...
```

ParentalRatingSchemeCollection
Public Class

length: Integer

addParentalRatingScheme(name: String, values: String) : ParentalRatingScheme
getParentalRatingScheme(name: String) : ParentalRatingScheme
item(index: Integer) : ParentalRatingScheme
item(index: Integer) : ParentalRatingScheme

```
Example usage:
<!-- This example shows a possible usage scenario for the ParentalRating
datastructure, i.e. to create a new programme to record and set
parental rating to MPAA parental rating to PG-13.
-->
...
<script type="text/javascript" language="Javascript1.5">
// get a reference to the recorder object
var recorder = document.getElementById("recorder");
// create new programme to record
var myProgramme = recorder.createProgrammeObject();
// add a new parental rating value to myProgramme, in this case the
// programme is rated PG-13 for the US using the MPAA Parental rating scheme.
myProgramme.parentalRatings.addParentalRating(
"urn:mpeg:mpeg7:cs:MPAAParentalRatingCS:2001", ”PG-13”, 2, 0, “US”
);
</script>
...
<object id="recorder" type="application/oipfRecordingScheduler"/>
```

ParentalRatingScheme
Public Class

name: String
threshold: ParentalRating
length: Integer

indexOf(ratingValue: String) : Integer
iconUri(index: Integer) : String
iconUri(index: Integer) : String
item(index: Integer) : String

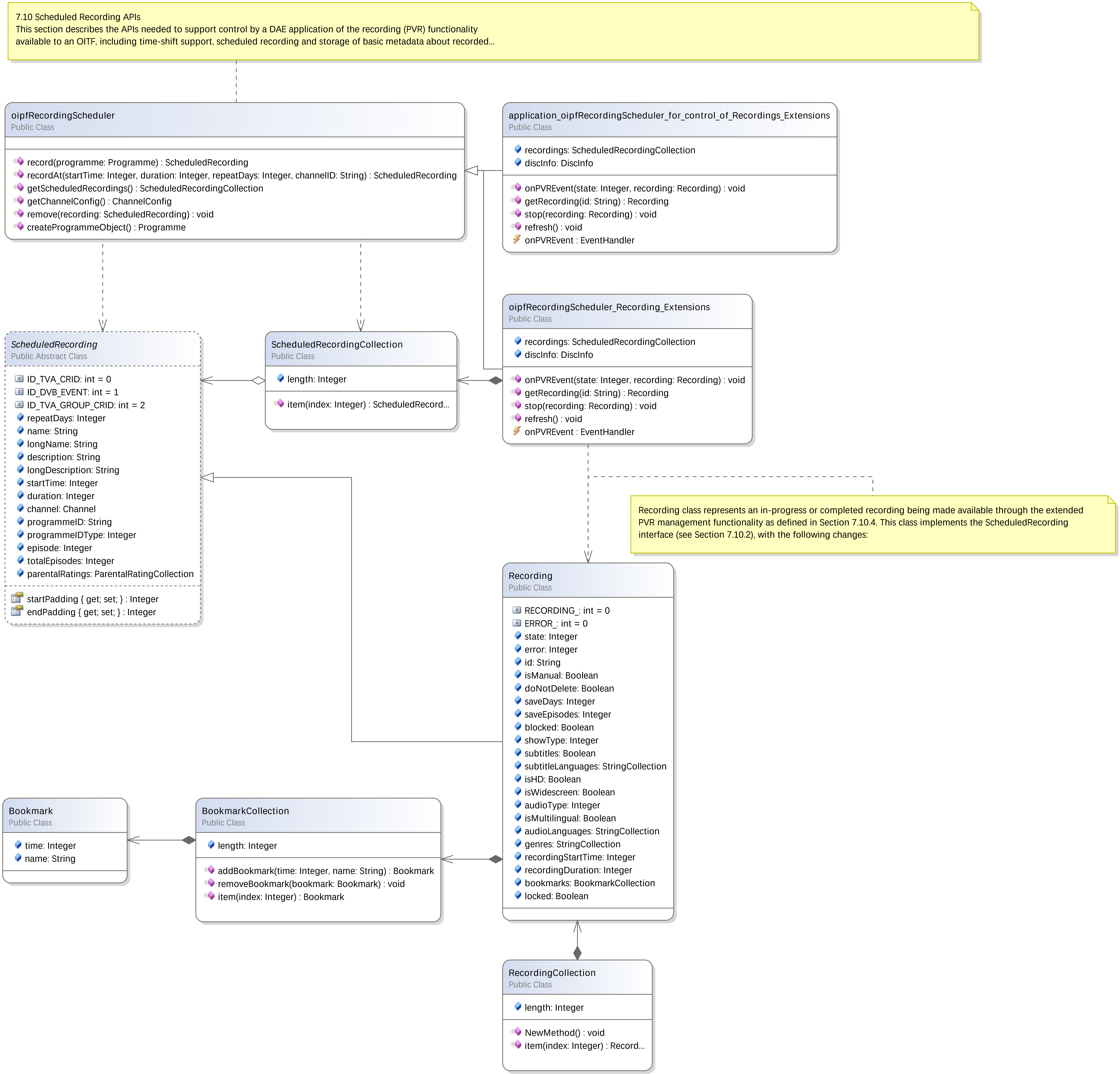
ParentalRating
Public Class

name: String
scheme: String
value: Integer
labels: Integer

ParentalRatingCollection
Public Class

length: Integer

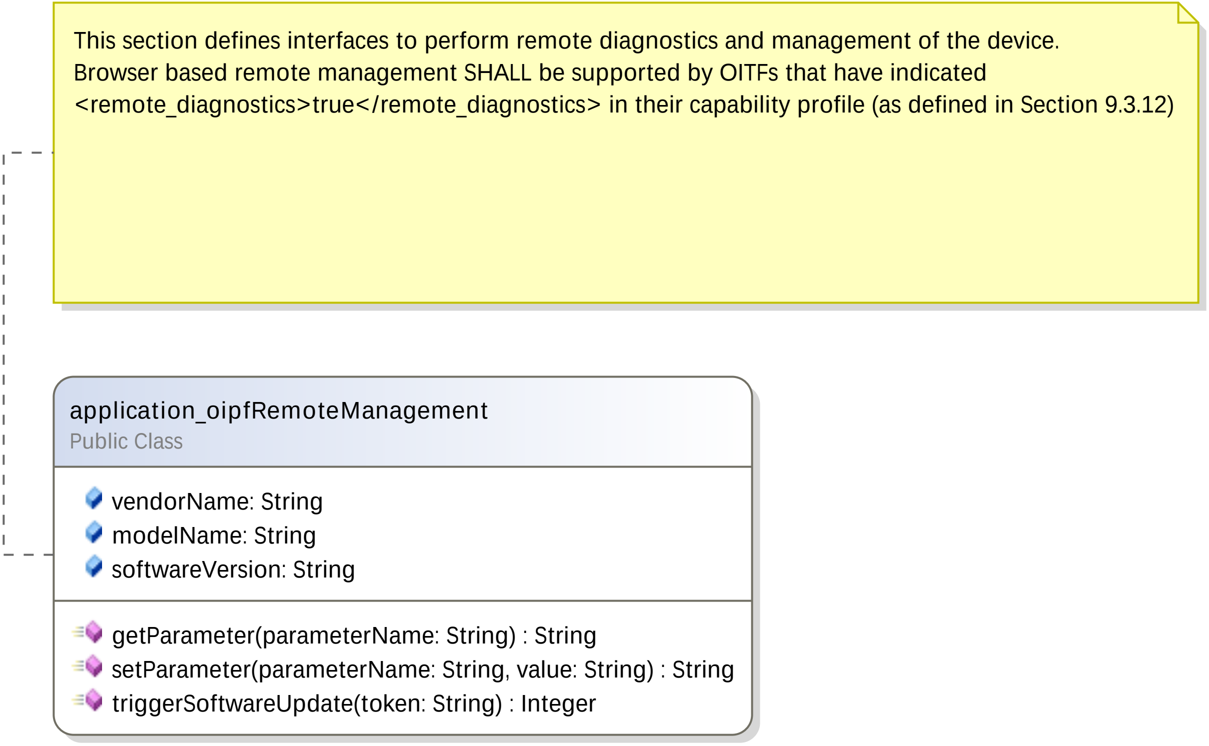
addParentalRating(scheme: String, name: String, value: Integer, labels: Integer, region: String) : void
item(index: Integer) : ParentalRating



7.10 Scheduled Recording APIs
This section describes the APIs needed to support control by a DAE application of the recording (PVR) functionality available to an OITF, including time-shift support, scheduled recording and storage of basic metadata about recorded...

Recording class represents an in-progress or completed recording being made available through the extended PVR management functionality as defined in Section 7.10.4. This class implements the ScheduledRecording interface (see Section 7.10.2), with the following changes:

oipfRecordingScheduler
Public Class
record(programme: Programme) : ScheduledRecording
recordAt(startTime: Integer, duration: Integer, repeatDays: Integer, channelID: String) : ScheduledRecording
getScheduledRecordings() : ScheduledRecordingCollection
getChannelConfig() : ChannelConfig
remove(recording: ScheduledRecording) : void
createProgrammeObject() : Programme
application_oipfRecordingScheduler_for_control_of_Recordings_Extensions
Public Class
recordings: ScheduledRecordingCollection
discInfo: DiscInfo
onPVREvent(state: Integer, recording: Recording) : void
getRecording(id: String) : Recording
stop(recording: Recording) : void
refresh() : void
onPVREvent : EventHandler
oipfRecordingScheduler_Recording_Extensions
Public Class
recordings: ScheduledRecordingCollection
discInfo: DiscInfo
onPVREvent(state: Integer, recording: Recording) : void
getRecording(id: String) : Recording
stop(recording: Recording) : void
refresh() : void
onPVREvent : EventHandler
ScheduledRecording
Public Abstract Class
ID_TVA_CRID: int = 0
ID_DVB_EVENT: int = 1
ID_TVA_GROUP_CRID: int = 2
repeatDays: Integer
name: String
longName: String
description: String
longDescription: String
startTime: Integer
duration: Integer
channel: Channel
programmeID: String
programmeIDType: Integer
episode: Integer
totalEpisodes: Integer
parentalRatings: ParentalRatingCollection
startPadding { get; set; } : Integer
endPadding { get; set; } : Integer
ScheduledRecordingCollection
Public Class
length: Integer
item(index: Integer) : ScheduledRecord...
Recording
Public Class
RECORDING_: int = 0
ERROR_: int = 0
state: Integer
error: Integer
id: String
isManual: Boolean
doNotDelete: Boolean
saveDays: Integer
saveEpisodes: Integer
blocked: Boolean
showType: Integer
subtitles: Boolean
subtitleLanguages: StringCollection
isHD: Boolean
isWidescreen: Boolean
audioType: Integer
isMultilingual: Boolean
audioLanguages: StringCollection
genres: StringCollection
recordingStartTime: Integer
recordingDuration: Integer
bookmarks: BookmarkCollection
locked: Boolean
Bookmark
Public Class
time: Integer
name: String
BookmarkCollection
Public Class
length: Integer
addBookmark(time: Integer, name: String) : Bookmark
removeBookmark(bookmark: Bookmark) : void
item(index: Integer) : Bookmark
RecordingCollection
Public Class
length: Integer
NewMethod() : void
item(index: Integer) : Record...



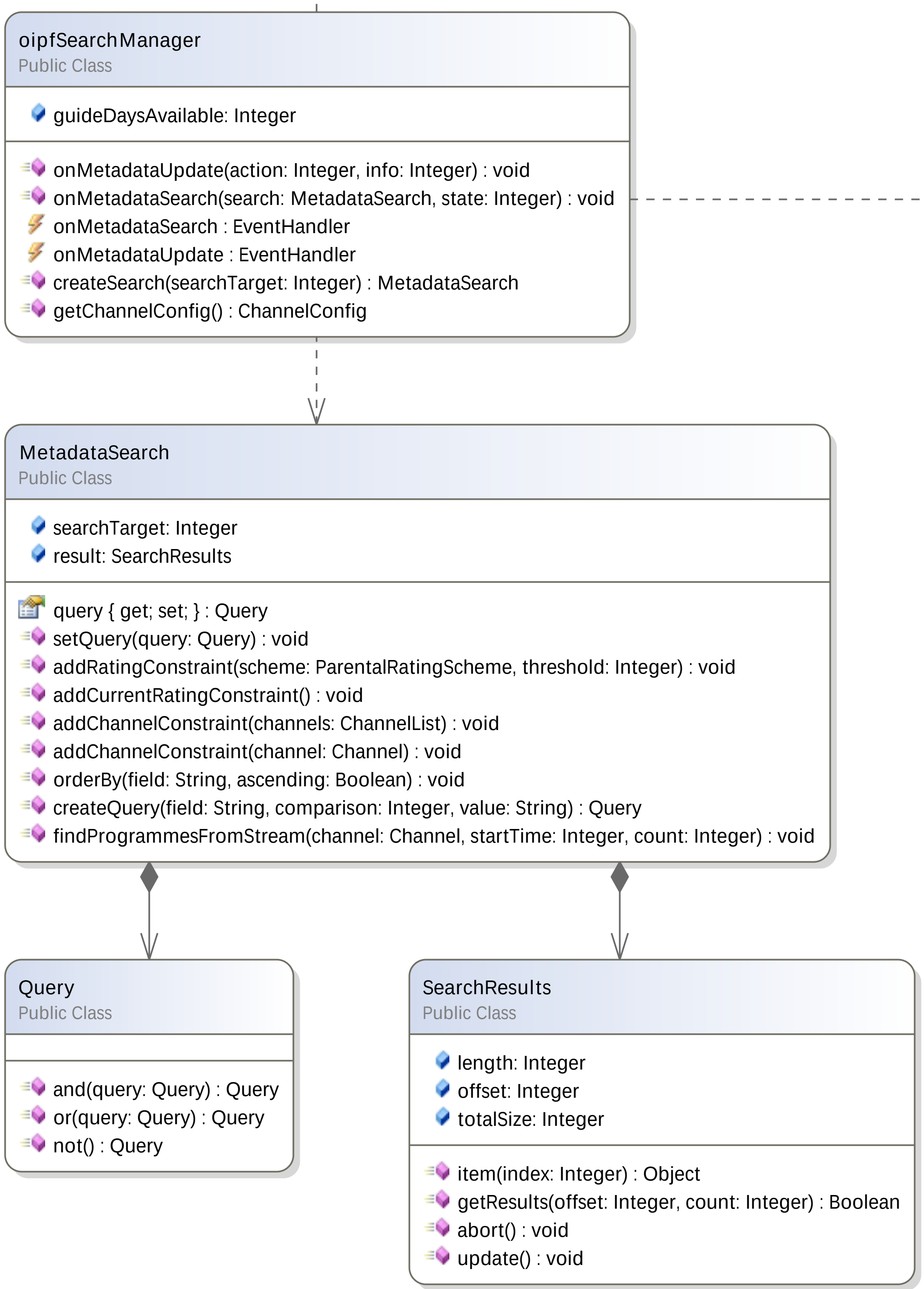
This section defines interfaces to perform remote diagnostics and management of the device.
Browser based remote management SHALL be supported by OITFs that have indicated
<remote_diagnostics>true</remote_diagnostics> in their capability profile (as defined in Section 9.3.12)

application_oipfRemoteManagement
Public Class

- vendorName: String
- modelName: String
- softwareVersion: String

- getParameter(parameterName: String) : String
- setParameter(parameterName: String, value: String) : String
- triggerSoftwareUpdate(token: String) : Integer

7.12 Metadata APIs
This section defines the Javascript APIs used by DAE applications for reading and searching metadata about programmes
and channels. This API does not specify whether these query operations are carried out on the OITF or whether they require communication with a server.
The metadata API provides DAE applications with high-level access to metadata about programmes and channels. This document describes the mapping between this API and CoD and programme guide metadata. Mappings between this API and other metadata sources are not specified in this document.
This section SHALL apply for OITFs that have indicated <clientMetadata> with value “true” and a type attribute with value “bcg” or “dvb-si” as defined in Section 9.3.7 in their capability profile.
Note that in order to access the metadata of programmes and channels several extensions to the Programme and Channel classes have been defined when the OITF has indicated support for <clientMetadata>. See sections 7.16.2.3 and 7.13.12.3 for more information).
The functionality as described in this section is subject to the security model of Section 10 (in particular Section 10.1.3.6).



oipfSearchManager
Public Class

guideDaysAvailable: Integer

onMetadataUpdate(action: Integer, info: Integer) : void
onMetadataSearch(search: MetadataSearch, state: Integer) : void
onMetadataSearch : EventHandler
onMetadataUpdate : EventHandler
createSearch(searchTarget: Integer) : MetadataSearch
getChannelConfig() : ChannelConfig

MetadataSearch
Public Class

searchTarget: Integer
result: SearchResults

query { get; set; } : Query
setQuery(query: Query) : void
addRatingConstraint(scheme: ParentalRatingScheme, threshold: Integer) : void
addCurrentRatingConstraint() : void
addChannelConstraint(channels: ChannelList) : void
addChannelConstraint(channel: Channel) : void
orderBy(field: String, ascending: Boolean) : void
createQuery(field: String, comparison: Integer, value: String) : Query
findProgrammesFromStream(channel: Channel, startTime: Integer, count: Integer) : void

Query
Public Class

and(query: Query) : Query
or(query: Query) : Query
not() : Query

SearchResults
Public Class

length: Integer
offset: Integer
totalSize: Integer

item(index: Integer) : Object
getResults(offset: Integer, count: Integer) : Boolean
abort() : void
update() : void

```
// Event handler function for asynchronous search results
function handleSearchResults() {
if ((state == 0) || (state ==1)) {
//more results are available, or our search has finished
// update the results. Doing this asynchronously means
// that if we’re working with the current set of results,
// we get the new results when it suits the application.
search.results.update();
// do stuff with the results
var myResult = search.result[0];
//get the next page of results
search.results.getResults(10, 20);
}
}
// Function that creates and starts a search
function doSearch() {
// create a new search for on-demand content
mySearchManager = document.getElementById(“searchManager”);
mySearch = mySearchmanager.createSearch(2);
// search for any programme with “space” in the title as a word
// or part of a word
myQuery = mySearch.createQuery(
“urn:tva:transport:fieldIDs:2002:Title”,
6,
“space”);
mySearch.setQuery(myQuery);
// return results alphabetically by title
mySearch.orderBy(“urn:tva:transport:fieldIDs:2002:Title”, true);
mySearchManager.onMetadataSearch = handleSearchResults;
if (mySearch.results.getResults(0, 10)) {
// some results are available immediately, e.g. because
// they were cached
// do stuff with the results
var myResult = mySearch.result[0];
}
}
```

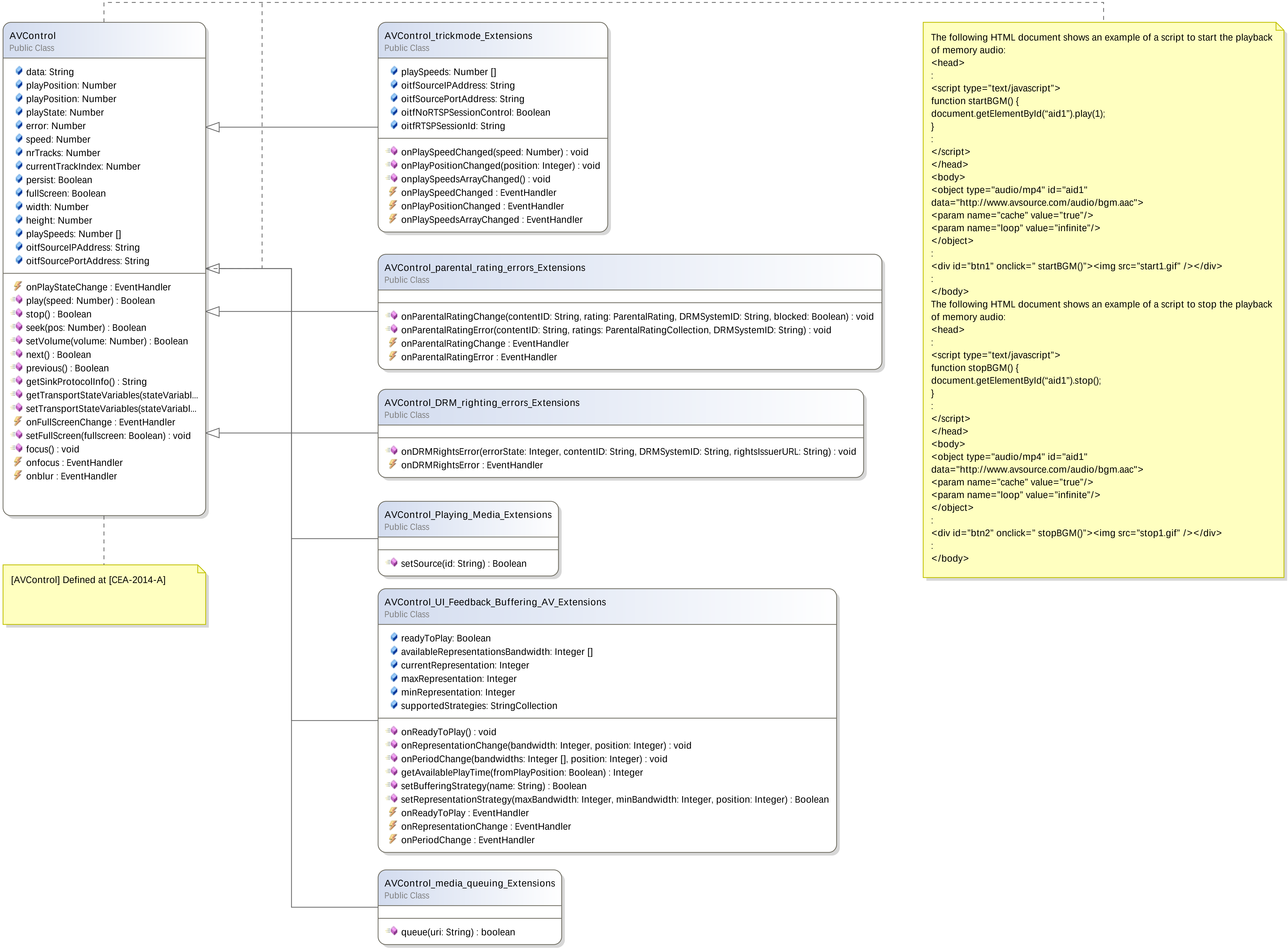
7.13 Scheduled content and hybrid tuner APIs

This section SHALL apply to OITFs that have indicated support for tuner control (i.e. <video_broadcast>true</video_broadcast> as defined in Section 9.3.1) in their capability. It describes the video/broadcast embedded object needed to support display and control by a DAE application of scheduled content received over local tuner functionality available to an OITF, including the conveyance of the channel list to the server.

The term “tuner” is used here to identify a piece of functionality to enable switching between different types of scheduled content services that are identified through logical channels. This includes IP broadcast channels, as well as traditional broadcast channels received over a hybrid tuner.

Video_Broadcast
Public Class
fullScreen: Boolean
playState: Integer
width { get; set; } : Integer
height { get; set; } : Integer
data { get; set; } : String
onChannelChangeError(channel: Channel, errorState: Number) : void
onPlayStateChange(state: Number, error: Number) : void
onChannelChangeSucceeded(channel: Channel) : void
onFullScreenChange() : void
onfocus() : void
onblur() : void
getChannelConfig() : ChannelConfig
bindToCurrentChannel() : Channel
createChannelObject(idType: Integer, dsd: String, sid: Integer) : Channel
createChannelObject(idType: Integer, onid: Integer, tsid: Integer, sid: Integer, sourceID: Integer, ipBroadcastID: String) : Channel
setChannel(channel: Channel, trickplay: Boolean, contentAccessDescriptorURL: String) : void
prevChannel() : void
nextChannel() : void
stop() : void
setFullScreen(fullscreen: Boolean) : void
setVolume(volume: Integer) : Boolean
getVolume() : Integer
release() : void
onfocus : EventHandler
onblur : EventHandler
onFullScreenChange : EventHandler
onChannelChangeError : EventHandler
onChannelChangeSucceeded : EventHandler
onPlayStateChange : EventHandler
Video_Broadcast_Recording_Extensions
Public Class
POSITION_START: int = 0
POSITION_CURRENT: int = 1
POSITION_END: int = 2
playbackOffset: Integer
maxOffset: Integer
recordingState: Integer
playPosition: Integer
playSpeed: Number
playSpeeds: Number []
currentTimeShiftMode: Integer
onPlaySpeedChanged(speed: Number) : void
onPlayPositionChanged(position: Integer) : void
onRecordingEvent(state: Integer, error: Integer, recordingId: String) : void
onplaySpeedsArrayChanged() : void
timeShiftMode { get; set; } : Integer
NewMethod() : void
recordNow(duration: Integer) : String
stopRecording() : void
pause() : Boolean
resume() : Boolean
setSpeed(speed: Number) : Boolean
seek(offset: Integer, reference: Integer) : Boolean
stopTimeshift() : Boolean
setChannel(channel: Channel, trickplay: Boolean, contentAccessDescriptorURL: String, offset: Integer) : void
onRecordingEvent : EventHandler
onPlaySpeedChanged : EventHandler
onPlayPositionChanged : EventHandler
onPlaySpeedsArrayChanged : EventHandler
Video_Broadcast_ParentalRatings_Extensions
Public Class
onParentalRatingChange(contentID: String, rating: ParentalRating, DRMSystemID: String, blocked: Boolean) : void
onParentalRatingError(contentID: String, ratings: ParentalRatingCollection, DRMSystemID: String) : void
onParentalRatingChange : EventHandler
onParentalRatingError : EventHandler
video_broadcast_synchronization_Extensions
Public Class
addStreamEventListener(targetURL: String, eventName: String, listener: function) : void
removeStreamEventListener(eventURL: String, eventName: String, listener: function) : void
Video_Broadcast_current_ChannelInformation_Extensions
Public Class
currentChannel: Channel
StreamEvent
Public Class
eventName: String
data: String
text: String
status: String
video_broadcast_DRM_rights_error_Extensions
Public Class
onDRMRightsError(errorState: Integer, contentID: String, DRMSystemID: String, rightsIssuerURL: String) : void
onDRMRightsError : EventHandler
Video_Broadcast_EIT_Extensions
Public Class
programmes: ProgrammeCollection
onProgrammesChanged() : void
onProgrammesChanged : EventHandler
ChannelConfig
Public Class
channelList: ChannelList
favouriteLists: FavouriteListCollection
currentFavouriteList: FavouriteList
onChannelScan(type: Integer, progress: Integer, frequency: Integer, signalStrength: Integer, channelNumber: Integer, channelType: Integer, channelCount: Integer, transponderCount: Integer) : void
onChannelListUpdate() : void
createFilteredList(blocked: Boolean, favourite: Boolean, hidden: Boolean, favouriteListID: String) : ChannelList
startScan(options: ChannelScanOptions, scanParameters: ChannelScanParameters) : void
stopScan() : void
createChannelList(bdr: String) : ChannelList
createChannelObject(idType: Integer, onid: Integer, tsid: Integer, sid: Integer, sourceID: Integer, ipBroadcastID: String) : Channel
createChannelScanParametersObject(idType: Integer) : ChannelScanParameters
onChannelScan : EventHandler
onChannelListUpdate : EventHandler
ChannelList
Public Class
length: Integer
getChannel(channelID: String) : Channel
getChannelByTriplet(onid: Integer, tsid: Integer, sid: Integer) : Channel
getChannelBySourceID(sourceID: Integer) : Channel
item(index: Integer) : Channel
FavouriteListCollection
Public Class
length: Integer
getFavouriteList(favID: String) : FavouriteList
createFavouriteList(name: String) : FavouriteList
remove(index: Integer) : Boolean
commit() : Boolean
activateFavouriteList(favID: string) : Boolean
item(index: Integer) : FavouriteList
FavouriteList
Public Class
favID: String
length: Integer
name { get; set; } : String
getChannel(channelID: String) : Channel
getChannelByTriplet(onid: Integer, tsid: Integer, sid: Integer) : Channel
getChannelBySourceID(sourceID: Integer) : Channel
item(index: Integer) : Channel
ChannelScanOptions
Public Class
channelType: Integer
replaceExisting: Boolean
FavouriteList_Extensions
Public Class
insertBefore(index: Integer, ccid: String) : Boolean
remove(index: Integer) : Boolean
commit() : Boolean
ChannelScanParameters
Public Abstract Class
Channel
Public Class
TYPE_TV: int = 0
TYPE_RADIO: int = 1
TYPE_OTHER: int = 2
ID_ANALOG: int = 0
ID_DVB_C: int = 10
ID_DVB_S: int = 11
ID_DVB_T: int = 12
ID_DVB_SI_DIRECT: int = 13
ID_DVB_C2: int = 14
ID_DVB_S2: int = 14
ID_DVB_T2: int = 16
ID_ISDB_C: int = 20
ID_ISDB_S: int = 21
ID_ISDB_T: int = 22
ID_ATSC_T: int = 30
ID_IPTV_SDS: int = 40
ID_IPTV_URI: int = 41
channelType: Integer
idType: Integer
ccid: String
tunerID: String
onid: Integer
tsid: Integer
sid: Integer
sourceID: Integer
freq: Integer
cni: Integer
majorChannel: Integer
minorChannel: Integer
dsd: String
favourite: Boolean
favIDs: StringCollection
locked: Boolean
manualBlock: Boolean
ipBroadcastID: String
channelMaxBitRate: Integer
channelTTR: Integer
name { get; set; } : String
DVBTChannelScanParameters
Public Class
startFrequency: Integer
endFrequency: Integer
raster: Integer
ofdm: String = MODE_1K, MODE_2K, MODE_4K, MODE_8K, MODE_16K, MODE_32K
modulationModes: Integer = 1, 4, 8, 16, 32, 64
bandwidth: String = BAND_1.7MHZ, BAND_5MHz, BAND_6MHz, BAND_7MHz, BAND_8MHz, BAND_10MHz
DVBCChannelScanParameters
Public Class
startFrequency: Integer
endFrequency: Integer
Raster: Integer
startNoetworkScanOnNIT: Boolean
modulationModes: Integer = 4,8,16,32,64,128,256
symbolRate: String
networkId: Integer
DVBSChannelScanParameters
Public Class
startFrequency: Integer
endFrequency: Integer
modulationModes: Integer = 1, 2, 4
symbolRate: String
polarisation: Integer = 1,2,4,8
codeRate: String = "3/4","5/6"
orbitalPosition: Number
networkId: Integer
Channel_Metadata_Extensions
Public Class
authorised: Boolean
longName { get; set; } : String
description { get; set; } : String
genre { get; set; } : StringCollection
hidden { get; set; } : Boolean
logoURL { get; set; } : string
getField(fieldId: String) : String
getLogo(width: Integer, height: Integer) : String

7.14 Media playback APIs
This section specifies several extensions to the audio object and the video object defined in Section 5.7.1 of [CEA-2014-A]. It also contains a subsection (i.e. Section 7.14.10) that defines the audio playback from memory API.



AVControl
Public Class

- data: String
- playPosition: Number
- playPosition: Number
- playState: Number
- error: Number
- speed: Number
- nrTracks: Number
- currentTrackIndex: Number
- persist: Boolean
- fullScreen: Boolean
- width: Number
- height: Number
- playSpeeds: Number []
- oitfSourceIPAddress: String
- oitfSourcePortAddress: String

- onPlayStateChange : EventHandler
- play(speed: Number) : Boolean
- stop() : Boolean
- seek(pos: Number) : Boolean
- setVolume(volume: Number) : Boolean
- next() : Boolean
- previous() : Boolean
- getSinkProtocolInfo() : String
- getTransportStateVariables(stateVariabl...
- setTransportStateVariables(stateVariabl...
- onFullScreenChange : EventHandler
- setFullScreen(fullscreen: Boolean) : void
- focus() : void
- onfocus : EventHandler
- onblur : EventHandler

[AVControl] Defined at [CEA-2014-A]

AVControl_trickmode_Extensions
Public Class

- playSpeeds: Number []
- oitfSourceIPAddress: String
- oitfSourcePortAddress: String
- oitfNoRTSPSessionControl: Boolean
- oitfRTSPSessionId: String

- onPlaySpeedChanged(speed: Number) : void
- onPlayPositionChanged(position: Integer) : void
- onplaySpeedsArrayChanged() : void
- onPlaySpeedChanged : EventHandler
- onPlayPositionChanged : EventHandler
- onPlaySpeedsArrayChanged : EventHandler

AVControl_parental_rating_errors_Extensions
Public Class

- onParentalRatingChange(contentID: String, rating: ParentalRating, DRMSystemID: String, blocked: Boolean) : void
- onParentalRatingError(contentID: String, ratings: ParentalRatingCollection, DRMSystemID: String) : void
- onParentalRatingChange : EventHandler
- onParentalRatingError : EventHandler

AVControl_DRM_righting_errors_Extensions
Public Class

- onDRMRightsError(errorState: Integer, contentID: String, DRMSystemID: String, rightsIssuerURL: String) : void
- onDRMRightsError : EventHandler

AVControl_Playing_Media_Extensions
Public Class

- setSource(id: String) : Boolean

AVControl_UI_Feedback_Buffering_AV_Extensions
Public Class

- readyToPlay: Boolean
- availableRepresentationsBandwidth: Integer []
- currentRepresentation: Integer
- maxRepresentation: Integer
- minRepresentation: Integer
- supportedStrategies: StringCollection

- onReadyToPlay() : void
- onRepresentationChange(bandwidth: Integer, position: Integer) : void
- onPeriodChange(bandwidths: Integer [], position: Integer) : void
- getAvailablePlayTime(fromPlayPosition: Boolean) : Integer
- setBufferingStrategy(name: String) : Boolean
- setRepresentationStrategy(maxBandwidth: Integer, minBandwidth: Integer, position: Integer) : Boolean
- onReadyToPlay : EventHandler
- onRepresentationChange : EventHandler
- onPeriodChange : EventHandler

AVControl_media_queuing_Extensions
Public Class

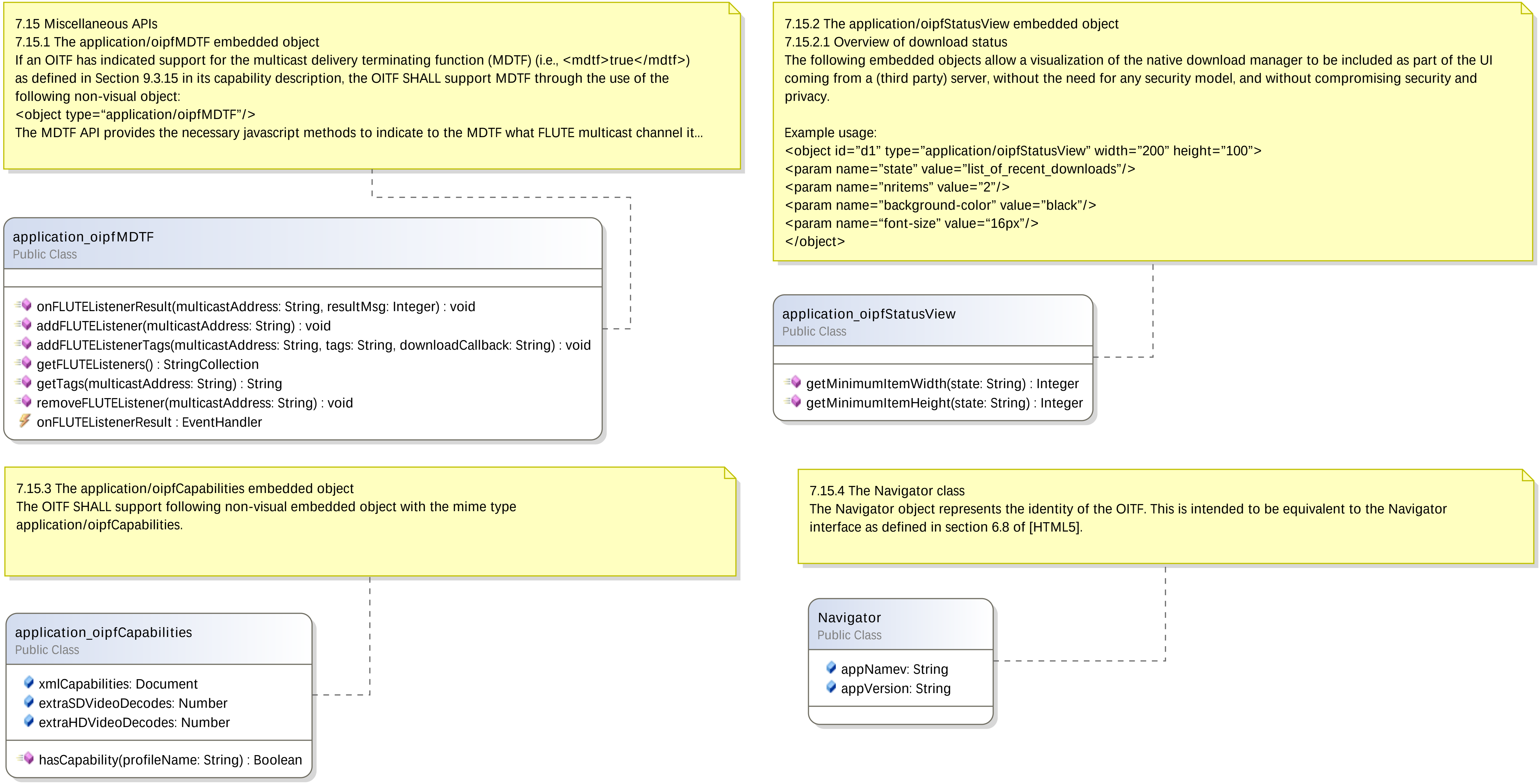
- queue(uri: String) : boolean

The following HTML document shows an example of a script to start the playback of memory audio:

```
<head>
:
<script type="text/javascript">
function startBGM() {
document.getElementById(“aid1”).play(1);
}
:
</script>
</head>
<body>
<object type="audio/mp4" id="aid1"
data="http://www.avsource.com/audio/bgm.aac">
<param name="cache" value="true"/>
<param name="loop" value="infinite"/>
</object>
:
<div id="btn1" onclick=" startBGM()"><img src="start1.gif" /></div>
:
</body>
```

The following HTML document shows an example of a script to stop the playback of memory audio:

```
<head>
:
<script type="text/javascript">
function stopBGM() {
document.getElementById(“aid1”).stop();
}
:
</script>
</head>
<body>
<object type="audio/mp4" id="aid1"
data="http://www.avsource.com/audio/bgm.aac">
<param name="cache" value="true"/>
<param name="loop" value="infinite"/>
</object>
:
<div id="btn2" onclick=" stopBGM()"><img src="stop1.gif" /></div>
:
</body>
```



7.15 Miscellaneous APIs
7.15.1 The application/oipfMDTF embedded object
If an OITF has indicated support for the multicast delivery terminating function (MDTF) (i.e., <mdtf>true</mdtf>) as defined in Section 9.3.15 in its capability description, the OITF SHALL support MDTF through the use of the following non-visual object:
<object type="application/oipfMDTF"/>
The MDTF API provides the necessary javascript methods to indicate to the MDTF what FLUTE multicast channel it...

application_oipfMDTF
Public Class

- onFLUTEListenerResult(multicastAddress: String, resultMsg: Integer) : void
- addFLUTEListener(multicastAddress: String) : void
- addFLUTEListenerTags(multicastAddress: String, tags: String, downloadCallback: String) : void
- getFLUTEListeners() : StringCollection
- getTags(multicastAddress: String) : String
- removeFLUTEListener(multicastAddress: String) : void
- onFLUTEListenerResult : EventHandler

7.15.2 The application/oipfStatusView embedded object
7.15.2.1 Overview of download status
The following embedded objects allow a visualization of the native download manager to be included as part of the UI coming from a (third party) server, without the need for any security model, and without compromising security and privacy.

Example usage:
<object id="d1" type="application/oipfStatusView" width="200" height="100">
<param name="state" value="list_of_recent_downloads"/>
<param name="nritems" value="2"/>
<param name="background-color" value="black"/>
<param name="font-size" value="16px"/>
</object>

application_oipfStatusView
Public Class

- getMinimumItemWidth(state: String) : Integer
- getMinimumItemHeight(state: String) : Integer

7.15.3 The application/oipfCapabilities embedded object
The OITF SHALL support following non-visual embedded object with the mime type application/oipfCapabilities.

application_oipfCapabilities
Public Class

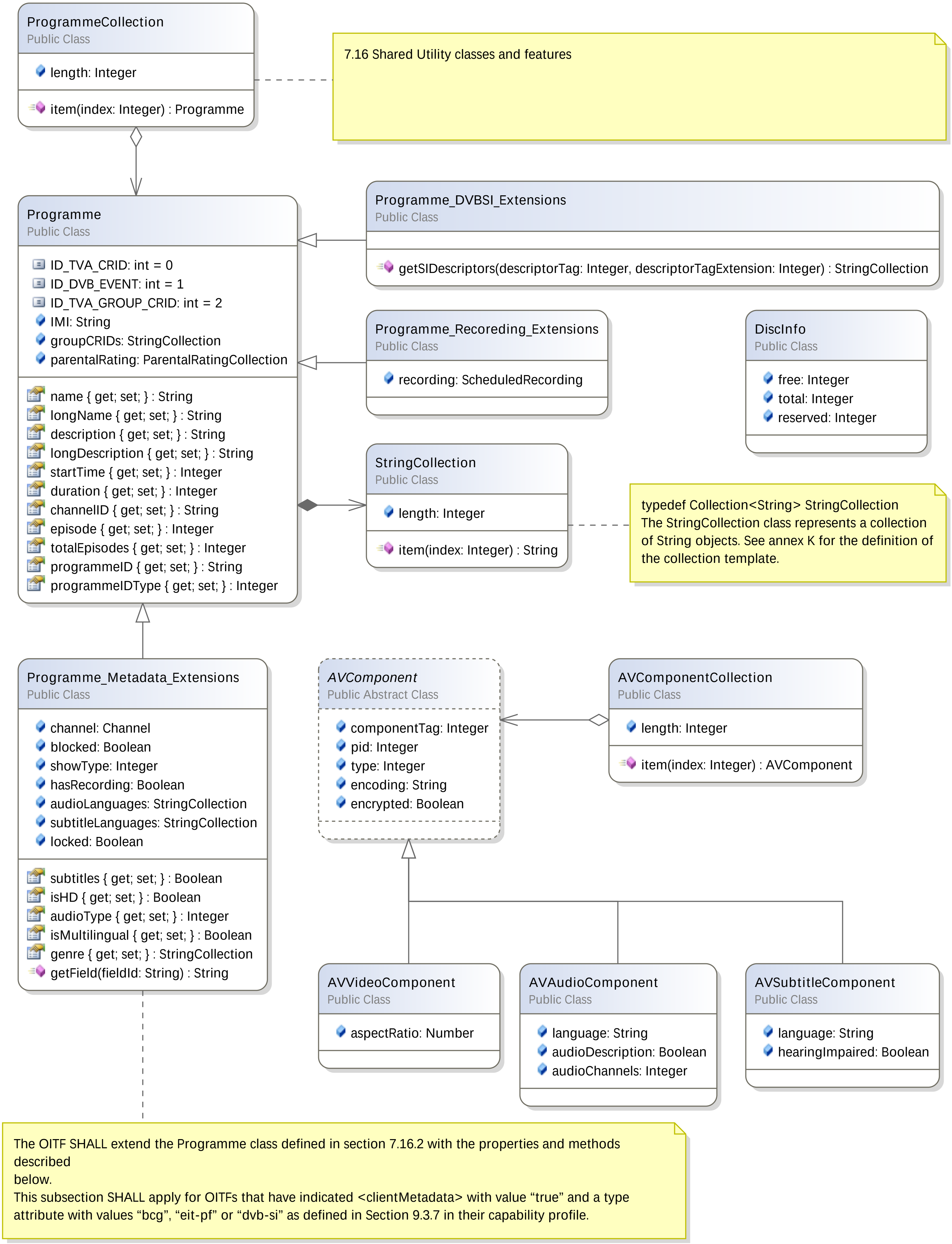
- xmlCapabilities: Document
- extraSDVideoDecodes: Number
- extraHDVideoDecodes: Number

- hasCapability(profileName: String) : Boolean

7.15.4 The Navigator class
The Navigator object represents the identity of the OITF. This is intended to be equivalent to the Navigator interface as defined in section 6.8 of [HTML5].

Navigator
Public Class

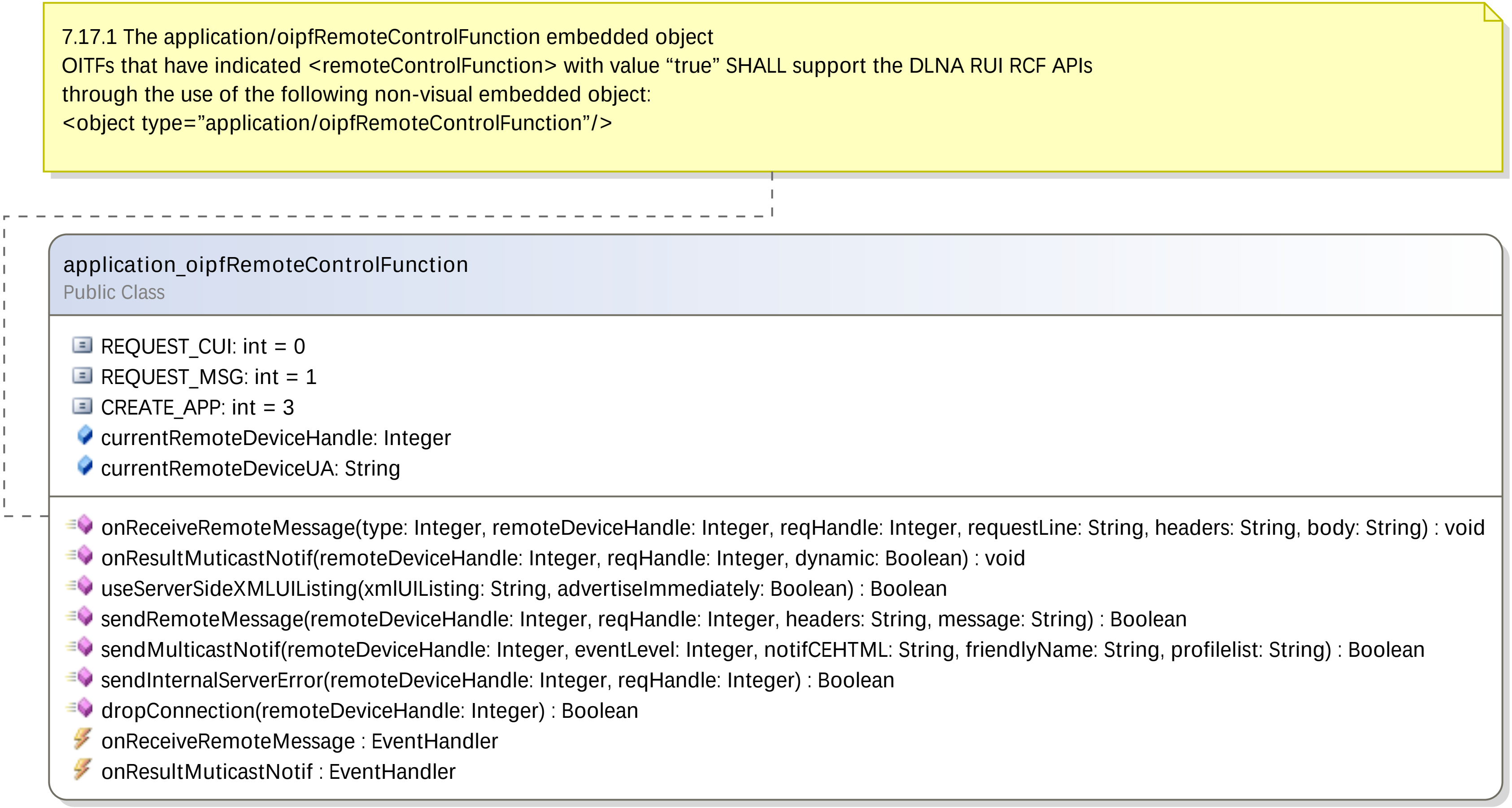
- appNamev: String
- appVersion: String


ProgrammeCollection
Public Class
length: Integer
item(index: Integer) : Programme
Programme
Public Class
ID_TVA_CRID: int = 0
ID_DVB_EVENT: int = 1
ID_TVA_GROUP_CRID: int = 2
IMI: String
groupCRIDs: StringCollection
parentalRating: ParentalRatingCollection
name { get; set; } : String
longName { get; set; } : String
description { get; set; } : String
longDescription { get; set; } : String
startTime { get; set; } : Integer
duration { get; set; } : Integer
channelID { get; set; } : String
episode { get; set; } : Integer
totalEpisodes { get; set; } : Integer
programmeID { get; set; } : String
programmeIDType { get; set; } : Integer
Programme_DVBSI_Extensions
Public Class
getSIDescriptors(descriptorTag: Integer, descriptorTagExtension: Integer) : StringCollection
Programme_Recoreding_Extensions
Public Class
recording: ScheduledRecording
DiscInfo
Public Class
free: Integer
total: Integer
reserved: Integer
StringCollection
Public Class
length: Integer
item(index: Integer) : String
Programme_Metadata_Extensions
Public Class
channel: Channel
blocked: Boolean
showType: Integer
hasRecording: Boolean
audioLanguages: StringCollection
subtitleLanguages: StringCollection
locked: Boolean
subtitles { get; set; } : Boolean
isHD { get; set; } : Boolean
audioType { get; set; } : Integer
isMultilingual { get; set; } : Boolean
genre { get; set; } : StringCollection
getField(fieldId: String) : String
AVComponent
Public Abstract Class
componentTag: Integer
pid: Integer
type: Integer
encoding: String
encrypted: Boolean
AVComponentCollection
Public Class
length: Integer
item(index: Integer) : AVComponent
AVVideoComponent
Public Class
aspectRatio: Number
AVAudioComponent
Public Class
language: String
audioDescription: Boolean
audioChannels: Integer
AVSubtitleComponent
Public Class
language: String
hearingImpaired: Boolean

7.16 Shared Utility classes and features

typedef Collection<String> StringCollection
The StringCollection class represents a collection of String objects. See annex K for the definition of the collection template.

The OITF SHALL extend the Programme class defined in section 7.16.2 with the properties and methods described
below.
This subsection SHALL apply for OITFs that have indicated <clientMetadata> with value “true” and a type attribute with values “bcg”, “eit-pf” or “dvb-si” as defined in Section 9.3.7 in their capability profile.



7.17.1 The application/oipfRemoteControlFunction embedded object
OITFs that have indicated <remoteControlFunction> with value “true” SHALL support the DLNA RUI RCF APIs
through the use of the following non-visual embedded object:
<object type=”application/oipfRemoteControlFunction”/>

application_oipfRemoteControlFunction
Public Class

- REQUEST_CUI: int = 0
- REQUEST_MSG: int = 1
- CREATE_APP: int = 3
- currentRemoteDeviceHandle: Integer
- currentRemoteDeviceUA: String

- onReceiveRemoteMessage(type: Integer, remoteDeviceHandle: Integer, reqHandle: Integer, requestLine: String, headers: String, body: String) : void
- onResultMuticastNotif(remoteDeviceHandle: Integer, reqHandle: Integer, dynamic: Boolean) : void
- useServerSideXMLUIListing(xmlUIListing: String, advertiseImmediately: Boolean) : Boolean
- sendRemoteMessage(remoteDeviceHandle: Integer, reqHandle: Integer, headers: String, message: String) : Boolean
- sendMulticastNotif(remoteDeviceHandle: Integer, eventLevel: Integer, notifCEHTML: String, friendlyName: String, profilelist: String) : Boolean
- sendInternalServerError(remoteDeviceHandle: Integer, reqHandle: Integer) : Boolean
- dropConnection(remoteDeviceHandle: Integer) : Boolean
- onReceiveRemoteMessage : EventHandler
- onResultMuticastNotif : EventHandler

OIPF DAE Class Diagram Draft by OIPF-T1-R2-Specification-Volume-5-Declarative-Application-Environment-v2_1-2011-06-21
IP Media SW1Team, HUMAX

Last updated 2011-09-21