

OSID V3 Specifications hierarchy package

Version Draft 3

This specifications represent a draft for OSID V3 interface definitions. These definitions may change at any time.

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Package Description	osid.hierarchy package
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Interfaces	osid.hierarchy.HierarchyProfile osid.hierarchy.HierarchyManager
	osid.hierarchy.HierarchyProxyManager
	osid.hierarchy.HierarchyTraversalSession
	osid.hierarchy.HierarchyDesignSession
	osid.hierarchy.HierarchyLookupSession
	osid.hierarchy.HierarchySearchSession
	osid.hierarchy.HierarchyAdminSession
	osid.hierarchy.HierarchyNotificationSession
	osid.hierarchy.HierarchyStructureReceiver
	osid.hierarchy.Hierarchy
	osid.hierarchy.HierarchyRecord
	osid.hierarchy.HierarchyQuery
	osid.hierarchy.HierarchyQueryRecord
	osid.hierarchy.HierarchyForm
	osid.hierarchy.HierarchyFormRecord
	osid.hierarchy.HierarchySearchOrder
	osid.hierarchy.HierarchySearchOrderRecord
	osid.hierarchy.HierarchySearch
	osid.hierarchy.HierarchySearchRecord
	osid.hierarchy.HierarchySearchResults
	osid.hierarchy.Hierarchy.Bessiver
	osid.hierarchy.HierarchyReceiver osid.hierarchy.HierarchyList
	osid.hierarchy.Position
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Package	osid.hierarchy
Title	Hierarchy Open Service Interface Definitions
Version	3.0.0
Description	The Hierarchy OSID provides a means for accessing and managing hierarchucal relationships among OSID lds. An OSID ld may have onr or more parents or children and the hierarchy itself represents a directed acyclic graph. The hierarchy service defines a set of interfaces used among other OSIDs that utilize hierarchies and can also be used to abstract a hierarchical data into a standalone service.



Interface	osid.hierarch	y.HierarchyProfile
Implements	osid.OsidProfile	
Description	The hierarchy profile describes the interoperability among hierarchy services.	
Method	supportsVi	sibleFederation
Description	Tests if federation is visible. Visible federation allo	ows for selecting among multiple hierarchies.
Return	boolean	true if visible federation is supported, false
netuiii	Doolean	otherwise
Compliance	mandatory	This method must be implemented.
Method	supportsHie	erarchyTraversal
Description	Tests if hierarchy traversal is supported.	
Return	boolean	true if hierarchy traversal is supported, false otherwise
Compliance	mandatory	This method must be implemented.
Method		ierarchyDesign
Description	Tests if hierarchy design is supported.	
Return	boolean	true if hierarchy design is supported, false otherwise
Compliance	mandatory	This method must be implemented.
Method		yStructureNotification
Description	Tests if hierarchy structure notification is supported	
Return	boolean	true if hierarchy structure notification is supported, false otherwise
Compliance	mandatory	This method must be implemented.
Method		ierarchyLookup
Description	Tests if a hierarchy lookup is supported.	
Return	boolean	true if hierarchy lookup is supported, false otherwise
Compliance	mandatory	This method must be implemented.
Method		ierarchySearch
Description	Tests if a hierarchy search is supported.	
Return	boolean	true if hierarchy search is supported, false otherwise
Compliance	mandatory	This method must be implemented.
Method		ierarchyAdmin erachyAdmin
Description	Tests if a hierarchy administration is supported.	Innovation of the second second
Return	boolean	true if hierarchy administration is supported, false otherwise
Compliance	mandatory	This method must be implemented.
Method	supportsHierarchyNotification	
Description	Tests if hierarchy notification is supported. Messages may be sent when hierarchies are created, modified, or deleted.	
Return	boolean	true if hierarchy notification is supported, false otherwise
Compliance	mandatory	This method must be implemented.
Method	supportsNodeSequencing	
Description	Tests if hierarchy node sequencing for ordering nodes is supported.	
Return	boolean	true if node sequencing is supported, false otherwise
Compliance	mandatory	This method must be implemented.



Method	getHierarchyRecordTypes		
Description	Gets the supported Hierarchy types.		-
Return	osid.type.TypeList		a list containing the supported Hierarchy record types
Compliance	mandatory		This method must be implemented.
Method		supportsHier	archyRecordType
Description	Tests if the given Hiera	rchy record type is suppor	rted.
Parameters	osid.type.Type	hierarchyRecordType	a Type indicating a Hierarchy record type
Return	boolean		true if the given record Type is supported, false otherwise
Compliance	mandatory		This method must be implemented.
Method		getHierarchyS	earchRecordTypes
Description	Gets the supported Hie	rarchy search record type	es.
Return	osid.type.TypeList		a list containing the supported Hierarchy search record types
Compliance	mandatory		This method must be implemented.
Method	supportsHierarchySearchRecordType		
Description	Tests if the given Hiera	rchy search record type is	s supported.
Parameters	osid.type.Type	hierarchySearchRecordType	a Type indicating a Hierarchy search record type
Return	boolean		true if the given Type is supported, false otherwise
Compliance	mandatory		This method must be implemented.



Interface	osid.hierarchy	.HierarchyManager	
	osid.OsidManager		
Implements	osid.hierarchy.HierarchyProfile		
	The hierarchy manager provides access sessions to traverse and manage hierrachies of Ids. The sessions included in this manager are:		
Description	 HierarchyTraversalSession: a basic session traversing a hierarchy HierarchyDesignSession: a session to design a hierarchy HierarchyStructureNotificationSession: a session for notififxations within a hierarchy structure HierarchyLookupSession: a session looking up hierarchies HierarchySearchSession: a session for searching for hierarchies HierarchyAdminSession: a session for creating and deleting hierarchies HierarchyNotificationSession: a session for subscribing to changes in hierarchies 		
Method		yTraversalSession	
Description	Gets the OsidSession associated with the hierar		
Return	osid.hierarchy.HierarchyTraversalSession	a HierarchyTraversalSession	
Errors	OPERATION_FAILED UNIMPLEMENTED	unable to complete request supportsHierarchyTraversal() is false	
Compliance	optional	This method must be implemented if supportsHierarchyTraversal() is true.	
Method	getHierachyTraver	salSessionForHierarchy	
Description	Gets the OsidSession associated with the hierar	chy traversal service for the given hierarchy.	
Parameters	osid.id.Id hierarchyId	the Id of the hierarchy	
Return	osid.hierarchy.HierarchyTraversalSession	the new HierarchyTraversalSession	
	NOT_FOUND	hierarchyId not found	
_	NULL_ARGUMENT	hierarchyid is null	
Errors	OPERATION_FAILED	unable to complete request	
	UNIMPLEMENTED	supportsHierarchyTraversal() or	
		supportsVisibleFedaration() is false	
0	and and	This method must be implemented if	
Compliance	optional	supportsHierarchyTraversal() and	
Method		supportsVisibleFederation() are true.	
Description	Gets the OsidSession associated with the hierar		
Return	osid.hierarchy.HierarchyDesignSession	a HierarchyDesignSession	
	OPERATION_FAILED	unable to complete request	
Errors	UNIMPLEMENTED	supportsHierarchyDesign() is false	
.		This method must be implemented if	
Compliance	optional	supportsHierarchyDesign() is true.	
Method		gnSessionForHierarchy	
Description	Gets the OsidSession associated with the topology design service using for the given hierarchy.		
Parameters	osid.id.Id hierarchyId	the Id of the graph	
Return	osid.hierarchy.HierarchyDesignSession	a HierarchyDesignSession	
	NOT_FOUND	hierarchyId is not found	
_	NULL_ARGUMENT	hierarchyId is null	
Errors	OPERATION_FAILED	unable to complete request	
	UNIMPLEMENTED	supportsHierarchyDesign() or	
		supportsVisibleFederation() is false	
0	antional	This method must be implemented if	
Compliance	optional	supports (icible Fodoration () and	
		supportsVisibleFederation() are true.	



Description Gets the session for subscribing to notifications of changes within a hierarchy structure.	Method	getHierarchyStructureNotificationSession		
Return OPERATION_FAILED unable to complete request supportsHierarchyStructureNotification() is false and the complete request supportsHierarchyStructureNotification() is false and the complete request supportsHierarchyStructureNotification() is false. Compliance optional getHierarchyStructureNotificationSession optional supportsHierarchyStructureNotification() is true. Method getHierarchyStructureNotificationSessionFrHierarchy Gets the session for subscribing to notifications of changes within a hierarchy structure for the given hierarchy. Parameters osid.nic.id hierarchy. InterarchyId the Id of the graph side and interarchy. InterarchyId is not found hierarchy. InterarchyId is not found number to complete request unable to complete request supportsHierarchyStructureNotification() or supportsHierarchyStructureNotification() or supportsHierarchyStructureNotification() or supportsHierarchyStructureNotification() and supportsHierarchyLookupSession Perors of State the OsidSession associated with the hierarchy secret sequest unable to complete request unable to complete request supportsHierarchyLookup() is false This method must be implemented if supportsHierarchySearchSession of a HierarchySearchSession of a HierarchySearchSession of a HierarchySearch service. OPERATION FAILED unable to complete request supportsHierarchySearch() is false This method must be implemented if supportsHierarchySearch() is false This method must be implemented if supportsHierarchySearch() is false This method must be implemented if supportsHierarchySearch() is false This method must be implemented if supportsHierarchySearchyAdmin() is true. Method optional getHierarchyAdminSession a HierarchyAdmin() is false This method mu		Gets the session for subscribing to notifications of	changes within a hierarchy structure.	
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Interface	osid.hierarchy.Hi	erarchyProxyManager
Implemente	osid.OsidProxyManager	
Implements	osid.hierarchy.HierarchyProfile	
Description	The hierarchy manager provides access sessions to traverse and manage hierrachies of Ids. Methods in this manager accept an Authentication object for the purpose of proxy authentication. The session included in this manager are: • HierarchyTraversalSession: a basic session traversing a hierarchy • HierarchyDesignSession: a session to design a hierarchy • HierarchyStructureNotificationSession: a session for notififxations within a hierarchy structure • HierarchyLookupSession: a session looking up hiererachies	
	HiererachySearchSession: a session for seaHierarchyAdminSession: a session for creatiHierarchyNotificationSession: a session for	ng and deleting hierarchies
Method	getHierarchy	TraversalSession
Description	Gets the OsidSession associated with the hierar	chy traversal service.
Parameters	osid.authentication.Authentication authentication	proxy authentication
Return	osid.hierarchy.HierarchyTraversalSession	a HierarchyTraversalSession
	NULL_ARGUMENT	authentication is null
	OPERATION_FAILED	unable to complete request
Errors	PERMISSION_DENIED	authentication is invalid
	UNIMPLEMENTED	supportsHierarchyTraversal() is false
	UNSUPPORTED	the authentication service is not supported
		This method must be implemented if
Compliance	optional	supportsHierarchyTraversal() is true.
Method	getHierarchyTrave	salSessionForHierarchy
Description	Gets the OsidSession associated with the hierar	chy traversal service for the given hierarchy.
Parameters	osid.id.Id hierarchyId	the Id of the hierarchy
	osid.authentication.Authentication authentication	proxy authentication
Return	osid.hierarchy.HierarchyTraversalSession	a HierarchyTraversalSession
	NOT_FOUND	hierarchyid not found
	NULL_ARGUMENT	hierarchyId or authentication is null
Енноно	OPERATION_FAILED	unable to complete request
Errors	PERMISSION_DENIED	authentication is invalid supportsHierarchyTraversal() or
	UNIMPLEMENTED	(Supports) lierarchy fraversal() or
		1
		supportsVisibleFederation() is false
	UNSUPPORTED	supportsVisibleFederation() is false the authentication service is not supported
Compliance	UNSUPPORTED	supportsVisibleFederation() is false the authentication service is not supported This method must be implemented if
Compliance		supportsVisibleFederation() is false the authentication service is not supported This method must be implemented if supportsHierarchyTraversal() and
Compliance	UNSUPPORTED optional	supportsVisibleFederation() is false the authentication service is not supported This method must be implemented if supportsHierarchyTraversal() and supportsVisibleFederation() are true.
•	UNSUPPORTED optional	supportsVisibleFederation() is false the authentication service is not supported This method must be implemented if supportsHierarchyTraversal() and supportsVisibleFederation() are true.
Method Description Parameters	optional getHierarch Gets the OsidSession associated with the hierar osid.authentication.Authentication authentication	supportsVisibleFederation() is false the authentication service is not supported This method must be implemented if supportsHierarchyTraversal() and supportsVisibleFederation() are true. syDesignSession chy design service. proxy authentication
Method Description	optional getHierarch Gets the OsidSession associated with the hierar osid.authentication.Authentication authentication osid.hierarchy.HierarchyDesignSession	supportsVisibleFederation() is false the authentication service is not supported This method must be implemented if supportsHierarchyTraversal() and supportsVisibleFederation() are true. syDesignSession chy design service. proxy authentication a HierarchyDesignSession
Method Description Parameters	UNSUPPORTED optional getHierarch Gets the OsidSession associated with the hierar osid.authentication.Authentication authentication osid.hierarchy.HierarchyDesignSession NULL_ARGUMENT	supportsVisibleFederation() is false the authentication service is not supported This method must be implemented if supportsHierarchyTraversal() and supportsVisibleFederation() are true. syDesignSession chy design service. proxy authentication a HierarchyDesignSession authentication is null
Method Description Parameters Return	UNSUPPORTED optional getHierarch Gets the OsidSession associated with the hierar osid.authentication.Authentication authentication osid.hierarchy.HierarchyDesignSession NULL_ARGUMENT OPERATION_FAILED	supportsVisibleFederation() is false the authentication service is not supported This method must be implemented if supportsHierarchyTraversal() and supportsVisibleFederation() are true. syDesignSession chy design service. proxy authentication a HierarchyDesignSession authentication is null unable to complete request
Method Description Parameters	UNSUPPORTED optional getHierarch Gets the OsidSession associated with the hierar osid.authentication.Authentication authentication osid.hierarchy.HierarchyDesignSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED	supportsVisibleFederation() is false the authentication service is not supported This method must be implemented if supportsHierarchyTraversal() and supportsVisibleFederation() are true. NyDesignSession chy design service. proxy authentication a HierarchyDesignSession authentication is null unable to complete request authentication is invalid
Method Description Parameters Return	UNSUPPORTED optional getHierarch Gets the OsidSession associated with the hierar osid.authentication.Authentication authentication osid.hierarchy.HierarchyDesignSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED	supportsVisibleFederation() is false the authentication service is not supported This method must be implemented if supportsHierarchyTraversal() and supportsVisibleFederation() are true. IVPesignSession chy design service. proxy authentication a HierarchyDesignSession authentication is null unable to complete request authentication is invalid supportsHierarchyDesign() is false
Method Description Parameters Return	UNSUPPORTED optional getHierarch Gets the OsidSession associated with the hierar osid.authentication.Authentication authentication osid.hierarchy.HierarchyDesignSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED	supportsVisibleFederation() is false the authentication service is not supported This method must be implemented if supportsHierarchyTraversal() and supportsVisibleFederation() are true. TyPesignSession chy design service. proxy authentication a HierarchyDesignSession authentication is null unable to complete request authentication is invalid supportsHierarchyDesign() is false the authentication service is not supported
Method Description Parameters Return	UNSUPPORTED optional getHierarch Gets the OsidSession associated with the hierar osid.authentication.Authentication authentication osid.hierarchy.HierarchyDesignSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED	supportsVisibleFederation() is false the authentication service is not supported This method must be implemented if supportsHierarchyTraversal() and supportsVisibleFederation() are true. IVPesignSession chy design service. proxy authentication a HierarchyDesignSession authentication is null unable to complete request authentication is invalid supportsHierarchyDesign() is false



	getHierarchyDesignSessionForHierarchy		
Method Description	Gets the OsidSession associated with the topol		
	osid.id.Id hierarchyId	the Id of the hierarchy	
Parameters	osid.authentication.Authentication authentication	proxy authentication	
Return	osid.hierarchy.HierarchyDesignSession	a HierarchyDesignSession	
11010111	NULL ARGUMENT	hierarchyid or authentication is null	
	OPERATION FAILED	unable to complete request	
_	PERMISSION DENIED	authentication is invalid	
Errors		supportsHierarchyDesign() or	
	UNIMPLEMENTED	supportsVisibleFederation() is false	
	UNSUPPORTED	the authentication service is not supported	
		This method must be implemented if	
Compliance	optional	supportsHierarchyDesign() and	
-	•	supportsVisibleFederation() are true.	
Method	getHierarchyStruc	tureNotificationSession	
Description	Gets the session for subscribing to notifications	of changes within a hierarchy structure.	
Parameters	osid.authentication.Authentication authentication	proxy authentication	
Return	osid.hierarchy.HierarchyStructureNotificationSession	a HierarchyStructureNotificationSession	
	NULL_ARGUMENT	authentication is null	
	OPERATION_FAILED	unable to complete request	
Errors	PERMISSION_DENIED	authentication is invalid	
Errors	LINIMDI EMENTED	supportsHierarchyStructureNotification() is	
	UNIMPLEMENTED	false	
	UNSUPPORTED	the authentication service is not supported	
		This method must be implemented if	
Compliance	optional	supportsHierarchyStructureNotification() is	
		A	
		true.	
Method	getHierarchyStructureNo	otificationSessionForHierarchy	
Method Description	Gets the session for subscribing to notifications of		
Description	Gets the session for subscribing to notifications of hierarchy.	otificationSessionForHierarchy of changes within a hierarchy structure for the given	
	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId	otificationSessionForHierarchy of changes within a hierarchy structure for the given the Id of the hierarchy	
Description	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication	the Id of the hierarchy proxy authentication	
Description Parameters	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession	
Description Parameters	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication	the Id of the hierarchy proxy authentication	
Description Parameters Return	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyid or authentication is null	
Description Parameters	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request	
Description Parameters Return	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid	
Description Parameters Return	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid supportsHierarchyStructureNotification() is false the authentication service is not supported	
Description Parameters Return	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid supportsHierarchyStructureNotification() is false	
Description Parameters Return	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid supportsHierarchyStructureNotification() is false the authentication service is not supported	
Description Parameters Return Errors Compliance	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNSUPPORTED	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid supportsHierarchyStructureNotification() is false the authentication service is not supported This method must be implemented if	
Description Parameters Return Errors	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNSUPPORTED optional	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchystructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid supportsHierarchyStructureNotification() is false the authentication service is not supported This method must be implemented if supportsHierarchyStructureNotification() and	
Description Parameters Return Errors Compliance	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNSUPPORTED optional	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid supportsHierarchyStructureNotification() is false the authentication service is not supported This method must be implemented if supportsHierarchyStructureNotification() and supportsVisibleFederation() are true.	
Description Parameters Return Errors Compliance Method	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNSUPPORTED optional getHierarchy	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid supportsHierarchyStructureNotification() is false the authentication service is not supported This method must be implemented if supportsHierarchyStructureNotification() and supportsVisibleFederation() are true.	
Description Parameters Return Errors Compliance Method Description	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNSUPPORTED optional getHierarch Gets the OsidSession associated with the hiera	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid supportsHierarchyStructureNotification() is false the authentication service is not supported This method must be implemented if supportsHierarchyStructureNotification() and supportsVisibleFederation() are true. InvLookupSession Inchy lookup service.	
Description Parameters Return Errors Compliance Method Description Parameters	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNSUPPORTED optional getHierarch Gets the OsidSession associated with the hiera osid.authentication.Authentication authentication	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid supportsHierarchyStructureNotification() is false the authentication service is not supported This method must be implemented if supportsHierarchyStructureNotification() and supportsVisibleFederation() are true. InvLookupSession rchy lookup service. proxy authentication	
Description Parameters Return Errors Compliance Method Description Parameters	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNSUPPORTED optional getHierarch Gets the OsidSession associated with the hiera osid.authentication.Authentication osid.hierarchy.HierarchyLookupSession NULL_ARGUMENT	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid supportsHierarchyStructureNotification() is false the authentication service is not supported This method must be implemented if supportsHierarchyStructureNotification() and supportsVisibleFederation() are true. InvLookupSession rchy lookup service. proxy authentication a HierarchyLookupSession	
Description Parameters Return Errors Compliance Method Description Parameters Return	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNSUPPORTED optional getHierarchy Gets the OsidSession associated with the hiera osid.authentication.Authentication osid.hierarchy.HierarchyLookupSession NULL_ARGUMENT OPERATION_FAILED	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid supportsHierarchyStructureNotification() is false the authentication service is not supported This method must be implemented if supportsHierarchyStructureNotification() and supportsVisibleFederation() are true. TyLookupSession rchy lookup service. proxy authentication is null	
Description Parameters Return Errors Compliance Method Description Parameters	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNSUPPORTED optional getHierarch Gets the OsidSession associated with the hiera osid.authentication.Authentication authentication osid.hierarchy.HierarchyLookupSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid supportsHierarchyStructureNotification() is false the authentication service is not supported This method must be implemented if supportsHierarchyStructureNotification() and supportsVisibleFederation() are true. TyLookupSession rchy lookup service. proxy authentication is null unable to complete request authentication is null unable to complete request authentication is invalid	
Description Parameters Return Errors Compliance Method Description Parameters Return	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNSUPPORTED optional getHierarch Gets the OsidSession associated with the hiera osid.authentication.Authentication authentication osid.hierarchy.HierarchyLookupSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication service is not supported This method must be implemented if supportsHierarchyStructureNotification() and supportsVisibleFederation() are true. InvLookupSession InchylookupSession a HierarchyLookupSession authentication is null unable to complete request authentication a HierarchyLookupSession authentication is null unable to complete request authentication is invalid supportsHierarchyLookup() is false	
Description Parameters Return Errors Compliance Method Description Parameters Return Errors	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNSUPPORTED optional getHierarch Gets the OsidSession associated with the hiera osid.authentication.Authentication authentication osid.hierarchy.HierarchyLookupSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNIMPLEMENTED UNIMPLEMENTED UNIMPLEMENTED UNIMPLEMENTED UNIMPLEMENTED UNIMPLEMENTED UNSUPPORTED	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication is invalid supportsHierarchyStructureNotification() is false the authentication service is not supported This method must be implemented if supportsHierarchyStructureNotification() and supportsVisibleFederation() are true. InvLookupSession rchy lookup service. proxy authentication a HierarchyLookupSession authentication is null unable to complete request authentication is invalid supportsHierarchyLookup() is false the authentication service is not supported	
Description Parameters Return Errors Compliance Method Description Parameters Return	Gets the session for subscribing to notifications of hierarchy. osid.id.Id hierarchyId osid.authentication.Authentication authentication osid.hierarchy.HierarchyStructureNotificationSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNSUPPORTED optional getHierarch Gets the OsidSession associated with the hiera osid.authentication.Authentication authentication osid.hierarchy.HierarchyLookupSession NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNIMPLEMENTED UNIMPLEMENTED	the Id of the hierarchy proxy authentication a HierarchyStructureNotificationSession hierarchyid or authentication is null unable to complete request authentication service is not supported This method must be implemented if supportsHierarchyStructureNotification() and supportsVisibleFederation() are true. InvLookupSession InchylookupSession a HierarchyLookupSession authentication is null unable to complete request authentication a HierarchyLookupSession authentication is null unable to complete request authentication is invalid supportsHierarchyLookup() is false	



Method	getHierarch	ySearchSession
Description	Gets the OsidSession associated with the hierarchy search service.	
Parameters	osid.authentication.Authentication authentication	proxy authentication
Return	osid.hierarchy.HierarchySearchSession	a HierarchySearchSession
	NULL_ARGUMENT	authentication is null
	OPERATION_FAILED	unable to complete request
Errors	PERMISSION_DENIED	authentication is invalid
	UNIMPLEMENTED	supportsHierarchySearch() is false
	UNSUPPORTED	the authentication service is not supported
		This method must be implemented if
Compliance	optional	supportsHierarchySearch() is true.
Method	getHierarch	yAdminSession
Description	Gets the hierarchy administrative session.	T
Parameters	osid.authentication.Authentication authentication	proxy authentication
Return	osid.hierarchy.HierarchyAdminSession	a HierarchyAdminSession
	NULL_ARGUMENT	authentication is null
	OPERATION_FAILED	unable to complete request
Errors	PERMISSION_DENIED	authentication is invalid
	UNIMPLEMENTED	supportsHierarchyAdmin() is false
	UNSUPPORTED	the authentication service is not supported
Compliance	antional	This method must be implemented if
Compliance	optional	supportsHierarchyAdmin() is true.
Method	getHierarchyN	otificationSession
Description	Gets the hierarchy notification session.	
Parameters	osid.hierarchy.HierarchyReceiver receiver	notification callback
Farameters	osid.authentication.Authentication authentication	proxy authentication
Return	osid.hierarchy.HierarchyNotificationSession	a HierarchyNotificationSession
	NULL_ARGUMENT	authentication is null
	OPERATION_FAILED	unable to complete request
Errors	PERMISSION_DENIED	authentication is invalid
	UNIMPLEMENTED	supportsHierarchyNotification() is false
	UNSUPPORTED	the authentication service is not supported
Compliance	optional	This method must be implemented if
Compliance	Optional	supportsHierarchyNotification() is true.



Interface	osid.hierarchy.Hier	rarchyTraversalSession	
Implements	osid.OsidSession		
Description	This session defines methods for traversing a hiercrhy. Each node in the hierarchy is a unique OSID Id. The hierarchy may be traversed recursively to establish the tree structure through getParents() and getChildren(). To relate these Ids to another OSID, getAncestors() and getDescendants() can be used for retrievals that can be used for bulk lookups in other OSIDs. Any Id available in an associated OSID is known to this hierarchy. A lookup up a particular Id in this hierarchy for the purposes of establishing a starting point for traversal or determining relationships should use the Id returned from the corresponding OSID object, not an Id that has been stored, to avoid problems with Id translation or aliasing. A user may not be authorized to traverse the entire hierarchy. Parts of the hierarchy may be made invisible through omission from the returns of getParents() or getChildren() in lieu of a		
	PERMISSION_DENIED error that may disrupt the	ne traversal through authorized pathways.	
Method	getHi	erarchyId	
Description	Gets the hierarchy Id associated with this session	-	
Return	osid.id.Id	the hierarchy Id associated with this session	
Compliance	mandatory	This method must be implemented.	
Method		lierarchy	
Description	Gets the hierarchy associated with this session.	1	
Return	osid.hierarchy.Hierarchy	the hierarchy associated with this session	
Errors	OPERATION_FAILED PERMISSION_DENIED	unable to complete request authorization failure	
Compliance	mandatory	This method must be implemented.	
Method		essHierarchy	
Description	Tests if this user can perform hierarchy queries. A authorization. A return of false indicates that it is k	return of true does not guarantee successful	
Return	boolean	false if lookup methods are not authorized, true otherwise	
Compliance	mandatory	This method must be implemented.	
Method		tRoots	
Description	Gets the root nodes of this hierarchy.	labor words and an	
Return	osid.id.IdList OPERATION_FAILED	the root nodes unable to complete request	
Errors	PERMISSION_DENIED	authorization failure	
Compliance	mandatory	This method must be implemented.	
Method		Parents	
Description	Tests if this Id contains any parents.		
Parameters	osid.id.Id id	the Id to query	
Return	boolean	true if this Id contains parents, false otherwise	
	NOT_FOUND	id is not found	
Errors	NULL_ARGUMENT	id is null	
EIIUIS	OPERATION_FAILED	unable to complete request	
	PERMISSION_DENIED	authorization failure	
Compliance	mandatory	This method must be implemented.	



Method		is	Parent
Description	Tests if an Id is a direct parent of another.		
Parameters	osid.id.Id	id	the Id to query
Parameters	osid.id.Id	parentId	the Id of a parent
Datum	· ·		true if this parentId is a parent of id, false
Return	boolean		otherwise
	NOT_FOUND		id is not found
Errors	NULL_ARGUMENT		id or parentId is null
Errors	OPERATION_FAILED		unable to complete request
	PERMISSION_DENIE)	authorization failure
Compliance	mandatory		This method must be implemented.
Provider Notes	If parentId not found re	turn false.	
Method		get	Parents
Description	Gets the parents of the		
Parameters	osid.id.Id	id	the Id to query
Return	osid.id.IdList		the parents of the id
	NOT_FOUND		id not found
Eurono	NULL_ARGUMENT		id is null
Errors	OPERATION_FAILED		unable to complete request
	PERMISSION_DENIE	D	authorization failure
Compliance	mandatory		This method must be implemented.
Method		isA	ncestor
Description	Tests if an Id is an ance	stor of another.	_
Parameters	osid.id.Id	id	the Id to query
- urumotoro	osid.id.Id	ancestorId	the Id of an ancestor
Return	boolean		true if this ancestorId is a parent of id, false
			otherwise
	NOT_FOUND		id not found
Errors	NULL_ARGUMENT		id or ancestorId is null
	OPERATION_FAILED		unable to complete request
	PERMISSION_DENIE)	authorization failure
Compliance	mandatory	6-1	This method must be implemented.
	If ancestorId not found		_
Method	0		Ancestors
Description	Gets the ancestors of th		luc Talacca d
Parameters	osid.id.Id	id	the Id to query
Parameters	cardinal	levels	the maximum number of levels to include. A value of
Return	and in This is		1 returns the same set as getParents(). the ancestors of the id
netuiii	osid.id.IdList NOT FOUND		id not found
	NULL_ARGUMENT		id is null
Errors			unable to complete request
	OPERATION_FAILED		authorization failure
Compliance	PERMISSION_DENIED		This method must be implemented.
Compliance	mandatory		mis method must be implemented.



Method		has	sChildren
Description	Tests if this Id has any	children.	
Parameters	osid.id.Id	id	the Id to query
Return	boolean		true if this Id has children, false otherwise
	NOT_FOUND		id not found
-	NULL_ARGUMENT		id is null
Errors	OPERATION_FAILED		unable to complete request
	PERMISSION_DENIE	D	authorization failure
Compliance	mandatory		This method must be implemented.
Method			isChild
Description	Tests if a node is a dire		0.1.1.0
Davamatava	osid.id.Id	id	the Id to query
Parameters	osid.id.Id	childId	the Id of a child
Deture	haalaan	•	true if this childId is a child of the Id, false
Return	boolean		otherwise
	NOT_FOUND		id not found
Errors	NULL_ARGUMENT		id or childId is null
Errors	OPERATION_FAILED		unable to complete request
	PERMISSION_DENIE	D	authorization failure
Compliance	mandatory		This method must be implemented.
Provider Notes	If childId not found ret	urn false.	
Method		ge	tChildren
Description	Gets the children of the	given Id.	
Parameters	osid.id.Id	id	the Id to query
Return	osid.id.IdList		the children of the id
			the children of the id
	NOT_FOUND		id not found
	NOT_FOUND NULL_ARGUMENT		id not found id is null
Errors	NOT_FOUND NULL_ARGUMENT OPERATION_FAILED		id not found id is null unable to complete request
Errors	NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE	D	id not found id is null unable to complete request authorization failure
Errors Compliance	NOT_FOUND NULL_ARGUMENT OPERATION_FAILED		id not found id is null unable to complete request authorization failure This method must be implemented.
Errors Compliance Method	NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE mandatory	isDo	id not found id is null unable to complete request authorization failure
Errors Compliance	NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE mandatory Tests if a node is a des	isDo	id not found id is null unable to complete request authorization failure This method must be implemented.
Errors Compliance Method	NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE mandatory Tests if a node is a desosid.id.Id	isDocendant of another.	id not found id is null unable to complete request authorization failure This method must be implemented. escendant the Id to query
Errors Compliance Method Description	NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE mandatory Tests if a node is a des	isDo	id not found id is null unable to complete request authorization failure This method must be implemented. escendant the Id to query the Id of a descendant
Errors Compliance Method Description	NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE mandatory Tests if a node is a desosid.id.Id	isDocendant of another.	id not found id is null unable to complete request authorization failure This method must be implemented. escendant the Id to query the Id of a descendant true if this descendantId is a child of the Id, false
Errors Compliance Method Description Parameters	NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE mandatory Tests if a node is a des osid.id.Id osid.id.Id boolean	isDocendant of another.	id not found id is null unable to complete request authorization failure This method must be implemented. escendant the Id to query the Id of a descendant true if this descendantId is a child of the Id, false otherwise
Errors Compliance Method Description Parameters	NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE mandatory Tests if a node is a desosid.id.Id osid.id.Id boolean NOT_FOUND	isDocendant of another.	id not found id is null unable to complete request authorization failure This method must be implemented. escendant the Id to query the Id of a descendant true if this descendantId is a child of the Id, false otherwise id not found
Errors Compliance Method Description Parameters	NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE mandatory Tests if a node is a des osid.id.Id osid.id.Id boolean NOT_FOUND NULL_ARGUMENT	isDocendant of another.	id not found id is null unable to complete request authorization failure This method must be implemented. escendant the Id to query the Id of a descendant true if this descendantId is a child of the Id, false otherwise id not found id or descendant is null
Errors Compliance Method Description Parameters Return	NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE mandatory Tests if a node is a des osid.id.Id osid.id.Id boolean NOT_FOUND NULL_ARGUMENT OPERATION_FAILED	isDocendant of another.	id not found id is null unable to complete request authorization failure This method must be implemented. escendant the Id to query the Id of a descendant true if this descendantId is a child of the Id, false otherwise id not found id or descendant is null unable to complete request
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Method	getDescendants		scendants
Description	Gets the descendants of		Scendaries
200011-p11011	osid.id.Id	id	the Id to query
Parameters			the maximum number of levels to include. A value of
	cardinal	levels	1 returns the same set as getChildren().
Return	osid.id.IdList		the descendants of the id
	NOT FOUND		id not found
-	NULL_ARGUMENT		id is null
Errors	OPERATION FAILED		unable to complete request
	PERMISSION_DENIE	D	authorization failure
Compliance	mandatory		This method must be implemented.
Method		traverseU	pBreadthFirst
Description	Traverses the hierarchy		rd. A hierarchy with multiple parents may return
Description	multiple positions for the	e same Id at different leve	els of the hierarchy.
Parameters	osid.id.Id	startNodeId	the Id of the start node
Parameters	cardinal	levels	the maximum number of levels to include
Return	osid.hierarchy.Positic	nList	the ancestors of the id
	NOT_FOUND		id not found
Errors	NULL_ARGUMENT		id is null
Ellois	OPERATION_FAILED		unable to complete request
	PERMISSION_DENIE	D	authorization failure
Compliance	mandatory		This method must be implemented.
Compliance	····ai··aaco·· /		
Method			UpDepthFirst
Method	Traverses the hierarchy	from the start node upwa	UpDepthFirst rd. A hierarchy with multiple parents may return
	Traverses the hierarchy multiple positions for the	from the start node upwa same Id at different leve	UpDepthFirst .rd. A hierarchy with multiple parents may return ls of the hierarchy.
Method	Traverses the hierarchy multiple positions for the osid.id.Id	from the start node upwa same Id at different leve startNodeId	upDepthFirst rd. A hierarchy with multiple parents may return ls of the hierarchy. the Id of the start node
Method Description Parameters	Traverses the hierarchy multiple positions for the osid.id.Id cardinal	from the start node upwa e same Id at different leve startNodeId levels	rd. A hierarchy with multiple parents may return ls of the hierarchy. the Id of the start node the maximum number of levels to include
Method Description	Traverses the hierarchy multiple positions for the osid.id.Id cardinal osid.hierarchy.Positio	from the start node upwa e same Id at different leve startNodeId levels	UpDepthFirst Ird. A hierarchy with multiple parents may return Is of the hierarchy. Ithe Id of the start node Ithe maximum number of levels to include Ithe ancestors of the id
Method Description Parameters	Traverses the hierarchy multiple positions for the osid.id.Id cardinal osid.hierarchy.Position	from the start node upwa e same Id at different leve startNodeId levels	UpDepthFirst rd. A hierarchy with multiple parents may return ls of the hierarchy. the Id of the start node the maximum number of levels to include the ancestors of the id id not found
Method Description Parameters	Traverses the hierarchy multiple positions for the osid.id.Id cardinal osid.hierarchy.Position NOT_FOUND NULL_ARGUMENT	from the start node upwa e same Id at different leve startNodeId levels	UpDepthFirst rd. A hierarchy with multiple parents may return ls of the hierarchy. the Id of the start node the maximum number of levels to include the ancestors of the id id not found id is null
Method Description Parameters Return	Traverses the hierarchy multiple positions for the osid.id.Id cardinal osid.hierarchy.Position NOT_FOUND NULL_ARGUMENT OPERATION_FAILED	from the start node upware same Id at different leve startNodeId levels	UpDepthFirst rd. A hierarchy with multiple parents may return ls of the hierarchy. the Id of the start node the maximum number of levels to include the ancestors of the id id not found id is null unable to complete request
Method Description Parameters Return Errors	Traverses the hierarchy multiple positions for the osid.id.Id cardinal osid.hierarchy.Position NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE	from the start node upware same Id at different leve startNodeId levels	upDepthFirst rd. A hierarchy with multiple parents may return ls of the hierarchy. the Id of the start node the maximum number of levels to include the ancestors of the id id not found id is null unable to complete request authorization failure
Method Description Parameters Return Errors Compliance	Traverses the hierarchy multiple positions for the osid.id.Id cardinal osid.hierarchy.Position NOT_FOUND NULL_ARGUMENT OPERATION_FAILED	from the start node upware same Id at different lever startNodeId levels onList	UpDepthFirst rd. A hierarchy with multiple parents may return Is of the hierarchy. the Id of the start node the maximum number of levels to include the ancestors of the id id not found id is null unable to complete request authorization failure This method must be implemented.
Method Description Parameters Return Errors	Traverses the hierarchy multiple positions for the osid.id.Id cardinal osid.hierarchy.Position NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE mandatory	from the start node upware same Id at different level startNodeId levels onList	UpDepthFirst rd. A hierarchy with multiple parents may return Is of the hierarchy. the Id of the start node the maximum number of levels to include the ancestors of the id id not found id is null unable to complete request authorization failure This method must be implemented. wnBreadthFirst
Method Description Parameters Return Errors Compliance	Traverses the hierarchy multiple positions for the osid.id.Id cardinal osid.hierarchy.Position NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE mandatory	from the start node upware same Id at different leve startNodeId levels onList traverseDo from the start node down	UpDepthFirst rd. A hierarchy with multiple parents may return Is of the hierarchy. the Id of the start node the maximum number of levels to include the ancestors of the id id not found id is null unable to complete request authorization failure This method must be implemented. wnBreadthFirst ward. A hierarchy with multiple parents may return
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Method Description Parameters Return Errors Compliance Method	Traverses the hierarchy multiple positions for the osid.id.Id cardinal osid.hierarchy.Position NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE mandatory Traverses the hierarchy multiple positions for the osid.id.Id	from the start node upware same Id at different level startNodeId levels onList traverseDo from the start node down as same Id at different level startNodeId	upDepthFirst rd. A hierarchy with multiple parents may return ls of the hierarchy. the Id of the start node the maximum number of levels to include the ancestors of the id id not found id is null unable to complete request authorization failure This method must be implemented. wnBreadthFirst ward. A hierarchy with multiple parents may return ls of the hierarchy. the Id of the start node
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Method Description Parameters Return Errors Compliance Method Description Parameters Return	Traverses the hierarchy multiple positions for the osid.id.Id cardinal osid.hierarchy.Position NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIE mandatory Traverses the hierarchy multiple positions for the osid.id.Id cardinal osid.hierarchy.Position NOT_FOUND NULL_ARGUMENT	from the start node upware same Id at different lever startNodeId levels onList TraverseDo from the start node down as same Id at different lever startNodeId levels onList	upDepthFirst rd. A hierarchy with multiple parents may return Is of the hierarchy. the Id of the start node the maximum number of levels to include the ancestors of the id id not found id is null unable to complete request authorization failure This method must be implemented. wnBreadthFirst ward. A hierarchy with multiple parents may return Is of the hierarchy. the Id of the start node the maximum number of levels to include the descendants of the id id not found id is null



Method	traverseDownDepthFirst		
Description	Traverses the hierarchy from the start node downward. A hierarchy with multiple parents may re		
Description	multiple positions for the	same ld at different	levels of the hierarchy.
Parameters	osid.id.Id	startNodeId	the Id of the start node
Parameters	cardinal	levels	the maximum number of levels to include
Return	osid.hierarchy.PositionList		the descendants of the id
	NOT_FOUND		id not found
Errors	NULL_ARGUMENT		id is null
Ellois	OPERATION_FAILED		unable to complete request
	PERMISSION_DENIE	D	authorization failure
Compliance	mandatory	•	This method must be implemented.



Interface	lada da a		a atal lata was sala a 11ta	
This session provides methods to manage a hierarchy. Each node is expressed as an OSID Id that represents an external object. The hierarchy only expresses relationships among these Ids. Howeve changing the hierarchy may have implications, such as inherited data, in the associated OSID. Method Description Return Osid.id.Id Description Return Osid.id.Id Description Return Osid.hierarchy associated with this session. Return Osid.hierarchy associated with this session. Return Operation Alled Description Adds a root node. Description Description Description Description Description Adds a root node. Description Description Description Description Adds a root node. Description Description Description Description Adds a root node. Description Description Description Description Adds a count node. Description Description Description Description Adds a count node. Description Description Description Adds a count node. Description Description Description Description Adds a count node. Description Descri			osia.nierarcny.Hie	erarchypesignSession
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Description Parameters	Description	<u> </u>		
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Description	Frrore	OPERATION_FAILED		
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NOT FOUND id or childId not found			1	
NULL APCUMENT id or child d is pull				
OPERATION_FAILED unable to complete request	Errors			
PERMISSION_DENIED authorization failure			D	
Compliance mandatory This method must be implemented.	Compliance	_	-	



Method			moveAhead
Description	Reorders nodes at t node.	he same hierarchy level	for sequencing by moving a node ahead of a reference
Parameters	osid.id.Id	id	the Id of the node to move
Parameters	osid.id.Id	referenceId	id is ordered in front of this reference node
	INVALID_ARGUM	ENT	id or referenceId not in a sequence
	NOT_FOUND		id or referenceId not found
Errors	NULL_ARGUMENT	-	id or referenceId is null
	OPERATION_FAIL		unable to complete request
	PERMISSION_DE	NIED	authorization failure
Compliance	optional		This method must be implemented if
_	optional		HierarchyManager.supportsNodeSequencing() is true.
Method			moveBehind
Description	Reorders nodes at t	he same hierarchy level	for sequencing by moving a node behind a reference node.
Parameters	osid.id.Id	id	the Id of the node to move
1 diameters	osid.id.Id	referenceId	id is ordered behind this reference node
	INVALID_ARGUM	ENT	id or referenceId not in a sequence
	NOT_FOUND		id or referenceId not found
Errors	NULL_ARGUMENT	-	id or referenceId is null
	OPERATION_FAIL	ED	unable to complete request
	PERMISSION_DE	NIED	authorization failure
Compliance	optional		This method must be implemented if
Compliance	ориона		HierarchyManager.supportsNodeSequencing() is true.
Method			removeRoot
Description	Removes a root node.		T
Parameters	osid.id.Id	id	the Id of the node
	NOT_FOUND		id was not found or not in hierarchy
Errors	NULL_ARGUMENT		id is null
	OPERATION_FAIL		unable to complete request
	PERMISSION_DEI	NIED	authorization failure
Compliance	mandatory		This method must be implemented.
Method	Damassa a abilal fua		removeChild
Description	Removes a child fro	id	the Id of the node
Parameters		childId	
	osid.id.Id NOT FOUND	Chilata	the Id of the child to remove
		-	id or childId was not found
Errors	NULL_ARGUMENT OPERATION FAIL		id or childId is null unable to complete request
	PERMISSION DE		authorization failure
Compliance	mandatory	NICO	This method must be implemented.
Method	linanuatory		emoveChildren
Description	Removes all childre		emovecimaren
Parameters	osid.id.Id	id	the Id of the node
	NOT FOUND	1	an node identified by the given Id was not found
_	NULL_ARGUMENT	-	id is null
Errors	OPERATION_FAIL		unable to complete request
	PERMISSION_DEI	NIED	authorization failure



Interface	osid.hierarchy.Hierarchy	StructureNotificationSession
Implements	osid.OsidSession	
Description	This session defines methods to receive notifications on adds/changes to a hierarchical structure. This session is intended for consumers needing to synchronize their state with this service without the use of polling. Notifications are cancelled when this session is closed. Notifications are triggered with changes to the structure of a hierarchy. For notifications of changes to the Hierarchy object use HierarchyNotificationSession.	
Method		erarchyId
	Gets the hierarchy Id associated with this session	
	osid.id.Id	the hierarchy Id associated with this session
	mandatory	This method must be implemented.
Method	'	ierarchy
Description	Gets the Hierarchy associated with this session.	ierarchy
Return	osid.hierarchy.Hierarchy	the Hierarchy associated with this session
	OPERATION FAILED	unable to complete request
Errors	PERMISSION DENIED	authorization failure
Compliance	mandatory	This method must be implemented.
Method		chyStructureNotifications
Description	Tests if this user can register for Hierarchy node successful authorization. A return of false indicate in a PERMISSION_DENIED. This is intended as notification operations.	s that it is known all methods in this session will result
	boolean	false if notification methods are not authorized, true otherwise
Compliance	mandatory	This method must be implemented.
Method	registerForNe	wHierarchyNodes
Description	Register for notifications of new hierarchy nodes. invoked when a new Hierarchy node is added.	
Errors	OPERATION_FAILED	unable to complete request
	PERMISSION_DENIED	authorization failure
	mandatory	This method must be implemented.
Method	registerForChangedAncestor	
	Registers for notification of an updated hierarchy structure that impacts the ancestors of the specific node. HierarchyStructureReceiver.newAncestor() or HierarchyStructureReceiver.deletedAncestor() is invoked when the specified hierarchy node experiences a change in ancestry.	
Parameters	osid.id.Id nodeId	the Id of the hierarchy node to monitor
	NOT_FOUND NULL ARGUMENT	a hierarchy node was not found identified by the given Id nodeId is null
	OPERATION_FAILED	unable to complete request
	OI LIVITON_IAILLD	
	PERMISSION_DENIED	authorization failure



Method	5 1 1 1 1 1 1 1	registerForCh	angedDescendant
			structure that impacts the descendants of the specified
Description	1	tureReceiver.newDesce	¥
Boodilption	HierarchyStructureReceiver.deletedDescendant() is invoked when the specified hierarchy r		
	experiences a change in	n offspring.	
Parameters	osid.id.Id	nodeId	the Id of the hierarchy node to monitor
	NOT FOUND		a hierarchy node was not found identified by the
			given Id
Errors	NULL_ARGUMENT		nodeId is null
	OPERATION_FAILED		unable to complete request
	PERMISSION_DENIE	D	authorization failure
Compliance	mandatory		This method must be implemented.
Method		registerForDele	etedHierarchyNodes
	Registers for notification	of deleted hierarchy nod	es.HierarchyStructureReceiver.deletedNode() is
Description	invoked when a hierarch		os. Herareny structure receive nucleated would find
Errors	OPERATION_FAILED		unable to complete request
	PERMISSION_DENIE	D	authorization failure
Compliance	mandatory		This method must be implemented.
Method		registerForDel	etedHierarchyNode
	Registers for notification	of a deleted hierarchy no	ode. HierarchyStructureReceiver.deletedNode() is
Description	, ,	fied hierarchy node is dele	,
	· · ·		
Parameters	osid.id.Id	nodeId	the Id of the Hierarchy node to monitor
	NOT_FOUND		a hierarchy node was not found identified by the
			given Id
Errors	NULL_ARGUMENT		nodeId is null
	OPERATION_FAILED		unable to complete request
	PERMISSION_DENIE	D	authorization failure
Compliance	mandatory		This method must be implemented.



Interface	osid.hierarchy.Hie	erarchyLookupSession
Implements	osid.OsidSession	
	This session provides methods for retrieving Hierarchy objects. The Hierarchy represents a structure of OSID Ids.	
	This session defines views that offer differing beh	aviors when retrieving multiple objects.
Description	comparative view: elements may be silently omi plenary view: provides a complete set or is an elements.	
	there is data that cannot be accessed. For examp	
Method		ıpHierarchies
Description	Tests if this user can perform Hierarchy lookups. authorization. A return of false indicates that it is k PERMISSION_DENIED. This is intended as a hipperations to unauthorized users.	known all methods in this session will result in a int to an application that may opt not to offer lookup
Return	boolean false if lookup methods are not authorized, true otherwise	
Compliance	mandatory	This method must be implemented.
Method	useComparat	iveHierarchyView
Description	•	translate elements based on this session, such as is used when greater interoperability is desired at the
Compliance	mandatory	This method is must be implemented.
Method	usePlenary	HierarchyView
Description		red. Methods will return what is requested or result in
Compliance	mandatory	This method is must be implemented.
Method	getHierarchy	
Description	Gets the Hierarchy specified by its Id. In plenary mode, the exact Id is found or a NOT_FOUND results. Otherwise, the returned Hierarchy may have a different Id than requested, such as the case where a duplicate Id was assigned to a Hierarchy and retained for compati	
Parameters	osid.id.Id hierarchyId	the Id of the Hierarchy to rerieve
Return	osid.hierarchy.Hierarchy	the returned Hierarchy
	NOT_FOUND	no Hierarchy found with the given Id
Errors	NULL_ARGUMENT	hierarchyId is null
	OPERATION_FAILED	unable to complete request
	PERMISSION_DENIED	authorization failure
Compliance	mandatory	This method must be implemented.



Open Knowledge Initiative Method	g skill and	archica DyTda
Method		archiesByIds
Description	Gets a Hierarchy corresponding to the given IdList. In plenary mode, the returned list contains all of the hierarchies specified in the Id list, in the order of the list, including duplicates, or an error results if an Id in the supplied list is not found or inaccessible. Otherwise, inaccessible Hierarchy objects may be omitted from the list and may present the elements in any order including returning a unique set.	
Parameters	osid.id.IdList hierarchyIdList	the list of Ids to rerieve
Return	osid.hierarchy.HierarchyList	the returned Hierarchy list
	NOT_FOUND	an Id was not found
Errors	NULL_ARGUMENT	hierarchyIdList is null
Ellois	OPERATION_FAILED	unable to complete request
	PERMISSION_DENIED	authorization failure
Compliance	mandatory	This method must be implemented.
Method	getHierarch	iesByGenusType
		genus Type which does not include hierarchies of
Description	types derived from the specified Type. In plenar	
		urned list may contain only those repositories that are
Davamatava	accessible through this session. In both cases, th	
Parameters	osid.type.Type hierarchyGenusType	a hierarchy genus type
Return	osid.hierarchy.HierarchyList	the returned Hierarchy list
Errors	NULL_ARGUMENT	hierarchyGenusType is null
EHOIS	OPERATION_FAILED PERMISSION DENIED	unable to complete request authorization failure
Compliance	mandatory	This method must be implemented.
Method		ByParentGenusType
Wicthou	Gets a Hierarchyl ist corresponding to the given	hierarchy genus Type and include any additional
	1	Type. In plenary mode, the returned list contains all
Description		the returned list may contain only those hierarchies
	that are accessible through this session. In both of	· · · · · · · · · · · · · · · · · · ·
Parameters	osid.type.Type hierarchyGenusType	a hierarchy genus type
Return	osid.hierarchy.HierarchyList	the returned Hierarchy list
	NULL_ARGUMENT	hierarchyGenusType is null
Errors	OPERATION_FAILED	unable to complete request
	PERMISSION_DENIED	authorization failure
Compliance	mandatory	This method must be implemented.
Method	getHierarchi	esByRecordType
	Gets a HierarchyList corresponding to the given	hierarchy record Type. The set of hierarchies
Description implementing the given record type are returned. In plenary mode, the returned list of		
Description	hierarchies or an error results. Otherwise, the returned list may contain only those hierarchies the	
	accessible through this session. In both cases, the order of the set is not specified.	
Parameters	osid.type.Type hierarchyRecordType	
		the returned Hierarchy list
Return	osid.hierarchy.HierarchyList	·
Return	NULL_ARGUMENT	hierarchyRecordType is null
	NULL_ARGUMENT OPERATION_FAILED	hierarchyRecordType is null unable to complete request
Return	NULL_ARGUMENT	hierarchyRecordType is null



Method	getHierarchies	
Description	Gets all Repositories. In plenary mode, the returned list contains all known hierarchies or an error results. Otherwise, the returned list may contain only those hierarchies that are accessible through this	
	session. In both cases, the order of the set is not	· ·
Return	osid.hierarchy.HierarchyList	a list of Hierarchies
Errors	OPERATION_FAILED	unable to complete request
Errors	PERMISSION_DENIED	authorization failure
Compliance	mandatory	This method must be implemented.



Interface	osid.hierarchy.HierarchySearchSession		
Implements	osid.OsidSession		
Description	This session provides methods for searching among Hierarchy objects. The search query is constructed using the HierarchyQuery interface. Multiple HierarchyQuery interfaces may be submitted into a search to perform a boolean OR. If more than one search element is specified within a single HierarchyQuery these elements form a boolean AND. getHierarchiesByQuery() is the basic search method and returns a list of Hierarchy objects. A more advanced search may be performed with getHierarchiesBySearch(). It accepts a HierarchySearch interface in addition to the query interface for the purpose of specifying additional options affecting the entire search, such as ordering. getHierarchiesBySearch() returns a HierarchySearchResults interface that can be used to access the resulting HierarchyList or be used to perform a search within the result set through HierarchySearch.		
	Hierarchies may have a record query interface in query interface is accessed via the HierarchuQu	dicated by their respective record types. The record uery.	
Method	canSearc	chHierarchies	
Description	Tests if this user can perform Hierarchy searche authorization. A return of false indicates that it is I	s. A return of true does not guarantee successful	
Return	boolean	false if lookup methods are not authorized, true	
		otherwise This method must be implemented.	
Compliance Method	mandatory	· · · · · · · · · · · · · · · · · · ·	
Description	Gets a hierarchy query interface.	rarchyQuery	
Return	osid.hierarchy.HierarchyQuery	the hierarchy query	
Compliance	mandatory	This method must be implemented.	
Method	getHierarchiesByQuery		
Description	Gets a list of Hierarchy objects matching the giv OR'd.	en search interface. Each element in the array is	
Parameters	osid.hierarchy.HierarchyQuery[] hierarchyQueries	the search query array	
Return	osid.hierarchy.HierarchyList	the returned HierarchyList	
	NULL_ARGUMENT	hierarchyQueries is null	
Errors	OPERATION_FAILED	unable to complete request	
	PERMISSION_DENIED	authorization failure	
	UNSUPPORTED hierarchyQueries is not of this service		
Compliance	mandatory This method must be implemented.		
Method		archySearch	
Description	Gets a hierarchy search interface.	In the second	
Return	osid.hierarchy.HierarchySearch	the hierarchy search interface	
Compliance	mandatory	This method must be implemented.	
Method		hySearchOrder	
Description	Gets a hierarchy search order interface. The Hier HierarchySearch to specify the ordering of resu	•	
Return	osid.hierarchy.HierarchySearchOrder	the hierarchy search order interface	
Compliance	mandatory	This method must be implemented.	



Method	getHierarchiesBySearch		
Description	Gets the search results matching the given search query using the given search. Each element in		rch query using the given search. Each element in the
Description	query array is OR'd.		
Parameters	osid.hierarchy.HierarchyQuery[]	hierarchyQueries	the search query array
Parameters	osid.hierarchy.HierarchySearch	hierarchySearch	the search interface
Return	osid.hierarchy.HierarchySearchResults		the search results
	NULL_ARGUMENT		hierarchyQueries or hierarchySearch is null
Funana	OPERATION_FAILED		unable to complete request
Errors	PERMISSION_DENIE	D	authorization failure
	UNSUPPORTED		a query or hierarchySearch is not of this service
Compliance	mandatory		This method must be implemented.



Interface	osid.hierarchy.Hie	erarchyAdminSession
Implements	osid.OsidSession	
Description	This session creates and removes hierarchies. The data for create and update is provided by the consumer via the form object.	
Method	canCreat	eHierarchies
Description	Tests if this user can create Hierarchy objects. A return of true does not guarantee successful authorization. A return of false indicates that it is known creating a Hierarchy will result in a PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer create operations to unauthorized users.	
Return	boolean	false if Hierarchy creation is not authorized, true otherwise
Compliance	mandatory	This method must be implemented.
Method		chyWithRecordTypes
Description	are supported, this method tests which record(s) a Providing an empty array tests if a Hierarchy can	s() can be used to examine which record interfaces are required for creating a specific Hierarchy. be created with no records.
Parameters	osid.type.Type[] hierarchyRecordTypes	
Return	boolean	true if Hierarchy creation using the specified Types is supported, false otherwise
Errors	NULL_ARGUMENT	hierarchyRecordTypes is null
Compliance	mandatory This method must be implemented.	
Method	getHierarchyFormForCreate	
Description	Gets the hierarchy form for creating new hierarchi transaction. This method is used for creating new known.	es. A new form should be requested for each create hierarchies, where only the Hierarchy Type is
Return	osid.hierarchy.HierarchyForm	the hierarchy form
Compliance	mandatory	This method must be implemented.
Method	create	Hierarchy
Description	Creates a new Hierarchy.	
Parameters	osid.hierarchy.HierarchyForm hierarchyForm	the form for this Hierarchy
Return	osid.hierarchy.Hierarchy	the new Hierarchy
Errors	ALREADY_EXISTS INVALID_ARGUMENT NULL_ARGUMENT	attempt at duplicating a property the underlying system is enforcing to be unique one or more of the form elements is invalid hierarchyForm is null
	OPERATION_FAILED unable to complete request PERMISSION_DENIED authorization failure UNSUPPORTED a hierarchyForm is not of this service	
Compliance	mandatory	This method must be implemented.
Method	canUpdateHierarchies	
Description	Tests if this user can update Hierarchy objects. A return of true does not guarantee successful authorization. A return of false indicates that it is known updating a Hierarchy will result in a PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer update operations to unauthorized users.	
Return	boolean	false if Hierarchy modification is not authorized, true otherwise
	mandatory	This method must be implemented.



Tests if this user can update a specified Hierarchy. A return of true does not guarantee successful authorization. A return of false indicates that it is known updating the Hierarchy will result in a PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer update operations to unauthorized users. Parameters Osid.id.Id InteractyId InteractyId InteractyId is null InteractyFormForUpdate Gets the hierarchy form for updating an existing hierarchy. A new hierarchy form should be requested for each update transaction. Parameters Osid.id.Id InteractyId InteractyId is not found, then it is acceptable to return false to indicate the lack of an update available. Return Osid.Id.Id InteractyId InteractyFormForUpdate Gets the hierarchy form for updating an existing hierarchy. A new hierarchy form should be requested for each update transaction. NOT_FOUND NOT_FOUN	Method	canlle	adatoHierarchy	
authorization. A return of false indicates that it is known updating the Hierarchy will result in a PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer update operations to unauthorized users. Parameters Return boolean	Wethou			
PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer update operations to unauthorized users. Parameters Parameters Osid.id.Id hierarchyId the Id of the Hierarchy false if hierarchy modification is not authorized, tru otherwise Provider Notes Method getHierarchyId is null is acceptable to return false to indicate the lack of an update available. Method getHierarchyFormForUpdate Gets the hierarchyId is not found, then it is acceptable to return false to indicate the lack of an update available. Method getHierarchyFormForUpdate Gets the hierarchy form for updating an existing hierarchy. A new hierarchy form should be requested for each update transaction. Parameters Sid.id.Id hierarchyId the Id of the Hierarchy form outled to each update transaction. Parameters NOT FOUND hierarchyId is not found hierarchyId				
parameters osid.id.id hierarchyId the Id of the Hierarchy Beturn boolean false if hierarchy modification is not authorized, tru otherwise Brors NULL_ARGUMENT hierarchyId is null Tompilance mandatory This method must be implemented. Beturn Description Parameters Beturn osid.id.id hierarchyId hierarchyId is not found Beturn osid.hierarchy.HierarchyForm hierarchyId is not found Beturn NOT FOUND hierarchyId is not found Beturn NOT FOUND hierarchyId is not found Beturn OPERATION FAILED unable to complete request Method Description Beturn OPERATION FAILED unable to complete request Method Description Beturn OPERATION FAILED hierarchyId is not found Mothod NULL_ARGUMENT hierarchyId is not found Mothod Description Parameters Operation All the Id of the Hierarchy Description OPERATION FAILED unable to complete request Method updateHierarchy Description Description hierarchyId hierarchyId Beturn NOT FOUND hierarchyId Description NULL_ARGUMENT hierarchyId NOT FOUND hierarchyId hierarchyId	Description			
Parameters				
Return boolean	Parameters		the Id of the Hierarchy	
Return Doolean Otherwise	T di dilictor 3		•	
Errors NULL_ARGUMENT hierarchyId is null mandatory This method must be implemented.	Return	boolean	- I	
This method must be implemented. If the hierarchyId is not found, then it is acceptable to return false to indicate the lack of an update available. Method	Errors	NULL ARGUMENT		
If the hierarchyId is not found, then it is acceptable to return false to indicate the lack of an update available. Method Gets the hierarchy form for updating an existing hierarchy. A new hierarchy form should be requested for each update transaction. Parameters Osid.id.Id hierarchyId the Id of the Hierarchy				
Method Gets the hierarchy form for updating an existing hierarchy. A new hierarchy form should be requested for each update transaction.				
Description Gets the hierarchy form for updating an existing hierarchy. A new hierarchy form should be requested for each update transaction. Parameters	Provider Notes	available.		
Parameters	Method	getHierar	chyFormForUpdate	
Parameters Osid.id.Id hierarchyId the Id of the Hierarchy	Description	Gets the hierarchy form for updating an existin	g hierarchy. A new hierarchy form should be requested	
Return Osid.hierarchy.HierarchyForm the hierarchy form	Description	for each update transaction.		
NOT_FOUND hierarchyId is not found	Parameters			
Compliance Method	Return		-	
Compliance				
This method must be implemented.	Errors			
Description Updates an existing hierarchy.				
Description		mandatory	This method must be implemented.	
Parameters Osid.id.Id		updateHierarchy		
Parameters osid.hierarchy.HierarchyForm hierarchyForm the form containing the elements to be updated the form contains an invalid value hite form contains an invalid value hiterarchy line for one present an invali	Description			
Errors INVALID_ARGUMENT the form containing the elements to be updated	Parameters			
Errors NOT_FOUND NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNSUPPORTED Method Description Return NOT_FOUND NULL_ARGUMENT OPERATION_FAILED Unable to complete request unable to complete request authorization failure Unsupported This method must be implemented. CanDeleteHierarchies Tests if this user can delete Hierarchy objects. A return of true does not guarantee successful authorization. A return of false indicates that it is known deleting a Hierarchy will result in a PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer delete operations to unauthorized users. Return Compliance mandatory This method must be implemented. Method CanDeleteHierarchy This method must be implemented.		1 .		
NULL_ARGUMENT				
OPERATION_FAILED unable to complete request PERMISSION_DENIED authorization failure UNSUPPORTED hierarchyForm is not supported This method must be implemented. Method canDeleteHierarchies Tests if this user can delete Hierarchy objects. A return of true does not guarantee successful authorization. A return of false indicates that it is known deleting a Hierarchy will result in a PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer delete operations to unauthorized users. Return boolean false if Hierarchy deletion is not authorized, true otherwise This method must be implemented. Method canDeleteHierarchy				
PERMISSION_DENIED UNSUPPORTED hierarchyForm is not supported This method must be implemented. Method CanDeleteHierarchies Tests if this user can delete Hierarchy objects. A return of true does not guarantee successful authorization. A return of false indicates that it is known deleting a Hierarchy will result in a PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer delete operations to unauthorized users. Return Boolean false if Hierarchy deletion is not authorized, true otherwise Compliance mandatory This method must be implemented. Method canDeleteHierarchy	Errors			
UNSUPPORTED mandatory This method must be implemented. Method CanDeleteHierarchies Tests if this user can delete Hierarchy objects. A return of true does not guarantee successful authorization. A return of false indicates that it is known deleting a Hierarchy will result in a PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer delete operations to unauthorized users. Return Boolean false if Hierarchy deletion is not authorized, true otherwise Compliance mandatory This method must be implemented. CanDeleteHierarchy			·	
Compliance mandatory This method must be implemented. Method canDeleteHierarchies Tests if this user can delete Hierarchy objects. A return of true does not guarantee successful authorization. A return of false indicates that it is known deleting a Hierarchy will result in a PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer delete operations to unauthorized users. Return boolean false if Hierarchy deletion is not authorized, true otherwise Compliance mandatory This method must be implemented. Method canDeleteHierarchy				
Method canDeleteHierarchies Tests if this user can delete Hierarchy objects. A return of true does not guarantee successful authorization. A return of false indicates that it is known deleting a Hierarchy will result in a PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer delete operations to unauthorized users. Return boolean false if Hierarchy deletion is not authorized, true otherwise Compliance mandatory This method must be implemented. Method canDeleteHierarchy	Compliance			
Tests if this user can delete Hierarchy objects. A return of true does not guarantee successful authorization. A return of false indicates that it is known deleting a Hierarchy will result in a PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer delete operations to unauthorized users. Return			·	
Description authorization. A return of false indicates that it is known deleting a Hierarchy will result in a PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer delete operations to unauthorized users. Return boolean false if Hierarchy deletion is not authorized, true otherwise Compliance mandatory This method must be implemented. Method canDeleteHierarchy	wethod			
PERMISSION_DENIED. This is intended as a hint to an application that may not wish to offer delete operations to unauthorized users. Return boolean false if Hierarchy deletion is not authorized, true otherwise Compliance mandatory This method must be implemented. Method canDeleteHierarchy			_	
operations to unauthorized users. Return boolean false if Hierarchy deletion is not authorized, true otherwise Compliance mandatory This method must be implemented. Method canDeleteHierarchy	Description		· · · · · · · · · · · · · · · · · · ·	
Return boolean false if Hierarchy deletion is not authorized, true otherwise Compliance mandatory This method must be implemented. Method canDeleteHierarchy		_	a film to an application that may not wish to oner delete	
Compliance mandatory This method must be implemented. Method canDeleteHierarchy		operations to unauthorized users.	false if Hierarchy deletion is not authorized true	
Compliance mandatory This method must be implemented. Method canDeleteHierarchy	Return	boolean	•	
Method canDeleteHierarchy	Compliance	mandatory		
			·	
Toolo II kino doo odan doloto di oposimod i inci di ori, i i i i i di doo inci gudi di inci di di o	ou			
authorization. A return of false indicates that it is known deleting the Hierarchy will result in a			•	
Description	Description	PERMISSION_DENIED. This is intended as a hint to an application that may not wish to o operations to unauthorized users.		
Parameters osid.id.Id hierarchyId the Id of the Hierarchy	Parameters		the Id of the Hierarchy	
false if deletion of this Hierarchy is not authorized		,	false if deletion of this Hierarchy is not authorized,	
Return boolean true otherwise	Return	poolean		
Errors NULL_ARGUMENT hierarchyId is null	Errors	NULL_ARGUMENT		
Compliance mandatory This method must be implemented.	Compliance			
Provider Notes If the hierarchyId is not found, then it is acceptable to return false to indicate the lack of an delete	Provider Notes		ptable to return false to indicate the lack of an delete	
available.	. To vider Notes	available.		



Method	deleteHierarchy		
Description	Deletes a Hierarchy.		
Parameters	osid.id.Id	hierarchyId	the Id of the Hierarchy to remove
	NOT_FOUND		hierarchyId not found
Errors	NULL_ARGUMENT		hierarchyId is null
EIIOIS	OPERATION_FAILED		unable to complete request
	PERMISSION_DENIE	D	authorization failure
Compliance	mandatory		This method must be implemented.
Method	addIdToHierarchy		ГоНіегагсһу
Description	Adds an Id to a Hierard	chy for the purpose of cre	eating compatibility. The primary Id of the Hierarchy is
Description	determined by the provi	der. The new Id performs	s as an alias to the primary Id.
Parameters	osid.id.Id	hierarchyId	the Id of an Hierarchy
Parameters	osid.id.Id	aliasId	the alias Id
	ALREADY_EXISTS		aliasId is already assigned
	NOT_FOUND		hierarchyId not found
Errors	NULL_ARGUMENT OPERATION_FAILED		hierarchyId or aliasId is null
			unable to complete request
	PERMISSION_DENIE	D	authorization failure
Compliance	mandatory		This method must be implemented.



	I	
Interface	osid.hierarchy.HierarchyNotificationSession	
Implements	osid.OsidSession	
Description	polling. Notifications are cancelled when this sess	schronize their state with this service without the use of sion is closed. erarchy object itself. Adding and removing Ids result
Method	·	ierarchyNotifications
Description		cations. A return of true does not guarantee successful known all methods in this session will result in a
Return	boolean	false if notification methods are not authorized, true otherwise
Compliance	mandatory	This method must be implemented.
Method	registerFor	NewHierarchies
Description	Register for notifications of new hierarchies. HierarchyReceiver.newHierarchy() is invoked when a new Hierarchy is created.	
Errors	OPERATION_FAILED PERMISSION_DENIED	unable to complete request authorization failure
Compliance	mandatory This method must be implemented.	
Method	registerForChangedHierarchies	
Description	Registers for notification of updated hierarchies. In when a hierarchy is changed.	HierarchyReceiver.changedHierarchy() is invoked
Errors	OPERATION_FAILED	unable to complete request
	PERMISSION_DENIED	authorization failure
Compliance	mandatory	This method must be implemented.
Method Description		hangedHierarchy HierarchyReceiver.changedHierarchy() is invoked
Parameters	osid.id.Id hierarchyId	the Id of the hierarchy to monitor
1 41411101010	NOT FOUND	a hierarchy was not found identified by the given Id
	NULL ARGUMENT	hierarchyId is null
Errors	OPERATION_FAILED	unable to complete request
	PERMISSION_DENIED	authorization failure
Compliance	mandatory	This method must be implemented.
Method	registerForDeletedHierarchies	
Description	Registers for notification of deleted hierarchies. HierarchyReceiver.deletedHierarchy() is invoked when a hierarchy is deleted.	
Errors	OPERATION_FAILED	unable to complete request
LITUIS	PERMISSION_DENIED	authorization failure
Compliance	mandatory	This method must be implemented.



Method	registerForDeletedHierarchy		
Description	Registers for notification of a deleted hierarchy. H when the specified hierarchy is deleted.		chy. HierarchyReceiver.deletedHierarchy() is invoked
Parameters	osid.id.Id	hierarchyId	the Id of the Hierarchy to monitor
	NOT_FOUND		a hierarchy was not found identified by the given Id
Errors	NULL_ARGUMENT OPERATION_FAILED		hierarchyId is null
Ellois			unable to complete request
	PERMISSION_DENIED		authorization failure
Compliance	mandatory		This method must be implemented.



Method Description The callback for notifications of new hierarchy nodes.					
The hierarchy receiver is the consumer supplied interface for receiving notifications pertaining to new updated or deleted hierarchy nodes. Method	Interface	osid.repository.HierarchyStructureReceiver			
Method Description The callback for notifications of new hierarchy nodes.	Implements	osid.OsidReceiver			
Description The callback for notifications of new hierarchy nodes.	Description		The hierarchy receiver is the consumer supplied interface for receiving notifications pertaining to new,		
Parameters osid.id.Id nodeId the Id of the new node Compliance mandatory This method must be implemented. Method newAncestor Description The callback for notification of a change to the node's ancestry. osid.id.Id nodeId the Id of the registered node osid.id.Id ancestorId the Id of the new ancestor This method must be implemented. Method deletedAncestor Description The callback for notification of a change to the node's ancestry. Osid.id.Id nodeId the Id of the registered node osid.id.Id ancestorId the Id of the registered node osid.id.Id osid.id.Id ancestorId the Id of the deleted ancestor Compliance mandatory This method must be implemented. Method newDescendant Description The callback for notification of a change to the node's descendants. Osid.id.Id nodeId the Id of the registered node osid.id.Id ancestorId the Id of the registered node osid.id.Id ancestorId the Id of the new descednant Compliance mandatory This method must be implemented. Method deletedDescendant Description The callback for notification of a change to the node's descendants. Osid.id.Id nodeId the Id of the new descednant This method must be implemented. Method deletedDescendant Description The callback for notification of a change to the node's descendants. Osid.id.Id nodeId the Id of the registered node Osid.id.Id nodeId the Id of the registered node This method must be implemented. Osid.id.Id nodeId the Id of the deleted descednant This method must be implemented. Compliance mandatory This method must be implemented. Method beletedNode	Method			newNode	
This method must be implemented. Method NewAncestor	Description	The callback for not	ifications of new hierard	hy nodes.	
Method Description The callback for notification of a change to the node's ancestry.	Parameters	osid.id.Id	nodeId	the Id of the new node	
Description The callback for notification of a change to the node's ancestry.	Compliance	mandatory	•	This method must be implemented.	
Parameters osid.id.Id	Method			newAncestor	
Sid.id.Id ancestorId the Id of the new ancestor	Description	The callback for not	ification of a change to	the node's ancestry.	
Compliance mandatory This method must be implemented.	Darameters		nodeId	the Id of the registered node	
Description The callback for notification of a change to the node's ancestry.			ancestorId		
Description The callback for notification of a change to the node's ancestry.		mandatory This method must be implemented.			
Parameters osid.id.Id nodeId the Id of the registered node osid.id.Id ancestorId the Id of the deleted ancestor This method must be implemented. Method newDescendant Description The callback for notification of a change to the node's descendants. Parameters osid.id.Id nodeId the Id of the registered node osid.id.Id ancestorId the Id of the new descednant Compliance mandatory This method must be implemented. Method deletedDescendant Description The callback for notification of a change to the node's descendants. Osid.id.Id nodeId the Id of the registered node osid.id.Id nodeId the Id of the registered node osid.id.Id ancestorId the Id of the deleted descednant This method must be implemented. Compliance mandatory This method must be implemented. Method deletedNode					
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Method newDescendant Description The callback for notification of a change to the node's descendants. Parameters osid.id.Id nodeId the Id of the registered node Compliance mandatory This method must be implemented. Method deletedDescendant Description The callback for notification of a change to the node's descendants. Osid.id.Id nodeId the Id of the registered node osid.id.Id ancestorId the Id of the deleted descednant Compliance mandatory This method must be implemented. Method deletedNode	- "		ancestorId		
Description The callback for notification of a change to the node's descendants. Parameters Osid.id.Id nodeId the Id of the registered node		mandatory			
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Method deletedDescendant Description The callback for notification of a change to the node's descendants. Parameters osid.id.Id nodeId the Id of the registered node osid.id.Id ancestorId the Id of the deleted descednant Compliance mandatory This method must be implemented. Method deletedNode	Compliance		ancestoria		
Description The callback for notification of a change to the node's descendants. Parameters Osid.id.Id nodeId the Id of the registered node		l l l l l l l l l l l l l l l l l l l	ما م		
Parameters osid.id.Id nodeId the Id of the registered node osid.id.Id ancestorId the Id of the deleted descednant Compliance mandatory This method must be implemented. Method deletedNode					
Compliance mandatory This method must be implemented. Method deleted Node					
Compliance mandatory This method must be implemented. Method deletedNode	Parameters			•	
Method deletedNode	Compliance				
40.000411040					
	Description	the callback for notification of deleted hierarchy nodes.			
Parameters osid.id.Id nodeId the Id of the deleted node					
Compliance mandatory This method must be implemented.	Compliance		1		



Interface	osid.hierarchy.Hierarchy			
Implements	osid.OsidCatalog	osid.OsidCatalog		
Description		A Hierarchy represents an authenticatable identity. Like all OSID objects, a Hierarchy is identified by its Id and any persisted references should use the Id.		
			archyRecord	
Description	retrieve an object implem	enting the requested rec pe may be the Type ret	rchy record Type. This method must be used to ord interface along with all of its ancestor interfaces. urned in getRecordTypes() or any of its parents in a pyRecordType) is true.	
Parameters			the type of the record to retrieve	
Return	osid.hierarchy.Hierarch	nyRecord	the agent with the specified record	
Errors	NULL_ARGUMENT OPERATION_FAILED PERMISSION_DENIED UNSUPPORTED		hierarchyRecordType is null unable to complete request authorization failure occurred hasRecordType(hierarchyrecordType) is false	
Compliance	mandatory		This method must be implemented.	



Interface	osid.hierarchy.HierarchyRecord	
Implements	osid.OsidRecord	
Description	A record for a Hierarchy. The methods specified by the record type are available through the underlying object.	
	getHierarchy	
Description	Gets the Hierarchy from which this record originated.	
Return	osid.hierarchy.Hierarchy the hierarchy	
Compliance	mandatory	This method must be implemented.



Interface	osid.hierarchy.HierarchyQuery		
Implements	osid.OsidCatalogQuery		
Description	This is the query interface for searching hierarchies. Results are returned if all the specified elements match. Each method match request produces an AND term while multiple invocations of a method produces a nested OR, except for accessing the HierarchyQuery record.		
Method		m	atchId
Description	Matches an Id of a nod boolean AND.	e in this hierarchy. Multiple	e nodes can be added to this query which behave as a
Parameters	osid.id.Id	id	Id to match
	boolean	match	true if a positive match, false for negative match
Errors	NULL_ARGUMENT		id is null
Compliance	mandatory		This method must be implemented.
	getHierarc		
Method			nyQueryRecord
Method Description	retrievals of the same ty	nterface corresponding to rpe may return the same u	the given Hierarchy record Type. Multiple record nderlying object and do not result in adding terms to be add AND terms to the other elements set in this
	retrievals of the same ty the query. Multiple reco	nterface corresponding to rpe may return the same u	the given Hierarchy record Type. Multiple record nderlying object and do not result in adding terms to be add AND terms to the other elements set in this a hierarchy record type
Description	retrievals of the same ty the query. Multiple reco- form.	nterface corresponding to ype may return the same under the retrievals of different type hierarchyRecordType	the given Hierarchy record Type. Multiple record nderlying object and do not result in adding terms to be add AND terms to the other elements set in this
Description Parameters	retrievals of the same ty the query. Multiple recor- form. osid.type.Type	nterface corresponding to ype may return the same under the retrievals of different type hierarchyRecordType	the given Hierarchy record Type. Multiple record nderlying object and do not result in adding terms to be add AND terms to the other elements set in this a hierarchy record type
Description Parameters	retrievals of the same ty the query. Multiple reconform. osid.type.Type osid.hierarchy.Hierar	nterface corresponding to ype may return the same under the retrievals of different type hierarchyRecordType	the given Hierarchy record Type. Multiple record nderlying object and do not result in adding terms to be add AND terms to the other elements set in this a hierarchy record type the hierarchy query record
Description Parameters	retrievals of the same ty the query. Multiple record form. osid.type.Type osid.hierarchy.Hierar NULL_ARGUMENT	nterface corresponding to the may return the same used the may return the same used the may retrievals of different type hierarchyRecordType chyQueryRecord	the given Hierarchy record Type. Multiple record nderlying object and do not result in adding terms to be add AND terms to the other elements set in this a hierarchy record type the hierarchy query record hierarchyRecordType is null
Description Parameters Return	retrievals of the same ty the query. Multiple recor- form. osid.type.Type osid.hierarchy.Hierar NULL_ARGUMENT OPERATION_FAILED	nterface corresponding to the may return the same used the may return the same used the may retrievals of different type hierarchyRecordType chyQueryRecord	the given Hierarchy record Type. Multiple record nderlying object and do not result in adding terms to be add AND terms to the other elements set in this a hierarchy record type the hierarchy query record hierarchyRecordType is null unable to complete request



Interface	osid.hierarchy.HierarchyQueryRecord	
Implements	osid.OsidRecord	
Description	A record for a HierarchyQuery. The methods specified by the record type are available through the underlying object.	
	getHier	archyQuery
Description	Gets the HierarchyQuery from which this record originated.	
Return	osid.hierarchy.HierarchyQuery	the hierarchy query
Compliance	mandatory	This method must be implemented.



Interface	osid.hierarchy.HierarchyForm		
Implements	osid.OsidCatalogForm		
Description	This is the form for creating and updating Hierarchy objects. Like all OsidForm objects, various data elements may be set here for use in the create and update methods in the HierarchyAdminSession. For each data element that may be set, metadata may be examined to provide display hints or data constraints.		
Method	getHierarchyFormRecord		
Description	Gets the HierarchyFormRecord interface corresponding to the given hierarchy record interface		ponding to the given hierarchy record interface Type.
Parameters	osid.type.Type hiera	archyRecordType	the hierarchy record type
Return	osid.hierarchy.HierarchyFormRecord		the record
	NULL_ARGUMENT		hierarchyRecordType is null
	OPERATION_FAILED		unable to complete request
Errors	PERMISSION_DENIED UNSUPPORTED		authorization failure occurred
			hasRecordType(hierarchyRecordType) is false
Compliance	mandatory		This method must be implemented.



Interface	osid.hierarchy.HierarchyFormRecord	
Implements	osid.OsidRecord	
Description	A record for a HierarchyForm. The methods specified by the record type are available through the underlying object.	
	getHierarchyForm	
Description	Gets the HierarchyForm from which this record originated.	
Return	osid.hierarchy.HierarchyForm the hierarchy form	
Compliance	mandatory	This method must be implemented.



Interface	osid.hierarchy.HierarchySearchOrder	
Implements	osid.OsidCatalogSearchOrder	
Description	An interface for specifying the ordering of search	results.
Method	getHierarchyS	SearchOrderRecord SearchOrderSearc
Description	Gets the hierarchy sarch record interface corresponding to the given repository record Type. Multiple retrievals return the same underlying object.	
Parameters	osid.type.Type hierarchyRecordType	a hierarchy record type
Return	osid.hierarchy.HierarchySearchOrderRecord	the hierarchy search order record interface
	NULL_ARGUMENT	hierarchyRecordType is null
	OPERATION_FAILED	unable to complete request
Errors	PERMISSION_DENIED	authorization failure occurred
	UNSUPPORTED	hasRecordType(hierarchyRecordType) is false
Compliance	mandatory	This method must be implemented.



Interface	osid.hierarchy.HierarchySearchOrderRecord	
Implements	osid.OsidRecord	
Description	A record for a HierarchySearchOrder. The methods specified by the record type are available through the underlying object.	
	getHierarchySearchOrder	
Description	Gets the HierarchySearchOrder from which this record originated.	
Return	osid.hierarchy.HierarchySearchOrder the hierarchy search order	
Compliance	mandatory	This method must be implemented.



	1		
Interface		osid.hierarchy.HierarchySearch	
Implements	osid.OsidSearch		
Description	HierarchySearch defir	nes the interface for specif	ying hierarchy search options.
Method		searchWithin	HierarchyResults
Description	Execute this search using	ng a previous search resul	t.
Parameters	osid.hierarchy.HierarchySearchResults	results	results from a query
Errors	INVALID_ARGUMENT	-	results is not valid
	NULL_ARGUMENT		results is null
Compliance	mandatory		This method must be implemented.
Method			ongHierarchies
Description		ng a given list of hierarchie	
Parameters Parameters Parameters	osid.id.IdList	hierarchyIds	list of hierarchies
Errors	NULL_ARGUMENT		hierarchyIds is null
Compliance	mandatory This method must be implemented.		
Method	orderHierarchyResults		
Description	Specify an ordering to the	ne search results.	
Parameters	osid.hierarchy.HierarchySearchOrder	hierarchySearchOrder	hierarchy search order
Errors	NULL_ARGUMENT hierarchySearchOrder is null		
Lilois	UNSUPPORTED		hierarchySearchOrder is not of this service
Compliance	mandatory		This method must be implemented.
Method	getHierarchySearchRecord		
Description	Gets the record corresponding to the given hierarchy search record Type. This method must be used to retrieve an object implementing the requested record interface along with all of its ancestor interfaces.		
Parameters	osid.type.Type	hierarchySearchRecordType	a hierarchy search record type
Return	osid.hierarchy.Hierar	chySearchRecord	the hierarchy search interface
	NULL_ARGUMENT hierarchySearchRecordType is null		
	OPERATION FAILED		unable to complete request
Errors PERMISSION DENI		D	authorization failure occurred
	UNSUPPORTED		hasSearchRecordType(hierarchyRecordType) is false
Compliance	mandatory		This method must be implemented.



Interface	osid.hierarchy.HierarchySearchRecord	
Implements	osid.OsidSearchRecord	
Description	A record for a HierarchySearch. The methods specified by the record type are available through the underlying object.	
	getHierarchySearch	
Description	Gets the HierarchySearch from which this record originated.	
Return	osid.hierarchy.HierarchySearch	the hierarchy search
Compliance	mandatory	This method must be implemented.



Interface	osid.hierarchy.HierarchySearchResults	
Implements	osid.OsidSearchResults	
Description	I	of a search and is used as a vehicle to perform a
Decemption	search within a previous result set.	
Method	getHi	erarchies
Description	Gets the hierarchy list resulting from the search.	
Return	osid.hierarchy.HierarchyList	the hierarchy list
Compliance	mandatory	This method must be implemented.
Method	getHierarchySearchResultsRecord	
Description	Gets the record corresponding to the given hierarchy search record Type. This method must be used to retrieve an object implementing the requested record interface along with all of its ancestor interfaces.	
Parameters	osid.type.Type hierarchySearchRecordType	a hierarchy search record type
Return	osid.hierarchy.HierarchySearchResultsRecord	the hierarchy search interface
	NULL_ARGUMENT	hierarchySearchRecordType is null
	OPERATION_FAILED	unable to complete request
Errors	PERMISSION_DENIED	authorization failure occurred
	UNSUPPORTED	hasSearchRecordType(hierarchySearchRecordType) is false
Compliance	mandatory	This method must be implemented.



Interface	osid.hierarchy.HierarchySearchResultsRecord	
Implements	osid.OsidSearchRecord	
Description	A record for a HierarchySearchResults. The methods specified by the record type are available through the underlying object.	
	getHierarchySearchResults	
Description	Gets the HierarchySearchResults from which this record originated.	
Return	osid.hierarchy.HierarchySearchResults the hierarchy search results	
Compliance	mandatory	This method must be implemented.



Interface	osid.hierarchy.HierarchyReceiver		
Implements	osid.OsidReceive	r	
Description		The hierarchy receiver is the consumer supplied interface for receiving notifications pertaining to new, updated or deleted Hierarchy objects.	
Method			newHierarchy
Description	The callback for no	The callback for notifications of new hierarchies.	
Parameters	osid.id.Id	hierarchyId	the Id of the new Hierarchy
Compliance	mandatory This method must be implemented.		This method must be implemented.
Method	changedHierarchy		
Description	The callback for no	The callback for notification of updated hierarchies.	
Parameters	osid.id.Id	hierarchyId	the Id of the updated Hierarchy
Compliance	mandatory This method must be implemented.		
Method	deletedHierarchy		
Description	the callback for notification of deleted hierarchies.		
Parameters	osid.id.Id	hierarchyId	the Id of the deleted Hierarchy
Compliance	mandatory	mandatory This method must be implemented.	



Interface	osid.hierarchy.HierarchyList		
Implements	osid.OsidList		
Description	Like all OsidLists, HierarchyList provides a means for accessing Id elements sequentially either one at a time or many at a time. Examples: while (hl.hasNext()) { Hierarchy hierarchy = hl.getNextHierarchy(); } or while (hl.hasNext()) { Hierarchy[] hierarchies = gl.getNextHierarchies(hl.available()); }		
Method			tHierarchy
Description	Gets the next Hierarch	y in this list.	
Return	osid.hierarchy.Hierar	chy	the next Hierarchy in this list. The hasNext() method should be used to test that a next Hierarchy is available before calling this method.
Гичана	ILLEGAL_STATE		no more elements available in this list
Errors	OPERATION FAILED		unable to complete request
Compliance	mandatory		This method must be implemented.
Method	getNextHierarchies		
Description	Gets the next set of Hierarchy objects in this list. The specified amount must be less than or equal to the return from available().		
Parameters	cardinal	n	the number of Hierarchy elements requested which must be less than or equal to available()
Return	an array of Hierarchy Elements. The		an array of Hierarchy elements. The length of the array is less than or equal to the number specified.
Errors	ILLEGAL_STATE		no more elements available in this list
EITOIS	OPERATION_FAILED		unable to complete request
Compliance	mandatory		This method must be implemented.



Interface	osid.hierarchy.Position	
Implements		
Description	This interface is a container for the node Id and le	vel for use with the hierarchy traversal methods.
Method	get	NodeId
Description	Gets the node Id.	
Return	osid.id.Id	the Id of this node
Compliance	mandatory	This method must be implemented.
Method		tLevel
Description	Gets the level of this node in relation to the starting node as specified in the traversal method. Descendants are assigned increasingly positive levels. Ancestors are assigned increasingly negative levels.	
Return	integer	the node level
Compliance	mandatory	This method must be implemented.
Method	hasParents	
Description	Tests if this node has any parents.	
Return	boolean	true if this Id has parents, false otherwise
Compliance	mandatory	This method must be implemented.
Method	get	Parents
Description	Gets the parents of this node.	
Return	osid.id.IdList	the parents of the id
Compliance	mandatory	This method must be implemented.
Method	110.0	Children
Description	Tests if this node has any children.	
Return	boolean	true if this Id has children, false otherwise
Compliance	mandatory This method must be implemented.	
Method	getChildren	
Description	Gets the children of the given Id.	
Return	osid.id.IdList	the children of the id
Compliance	mandatory	This method must be implemented.



Interface	osid.hierarchy.PositionList		
Implements	osid.OsidList		
Description	Like all OsidLists, PositionList provides a means for accessing Id elements sequentially either one at a time or many at a time. Examples: while (pl.hasNext()) { Position position = pl.getNextPosition(); } or while (pl.hasNext()) { Position[] positions = pl.getNextPositions(pl.available());		
Method		getNe	xtPosition
Description	Gets the next Position	n this list.	
Return	osid.hierarchy.Positio	n	the next Position in this list. The hasNext() method should be used to test that a next Position is available before calling this method.
-	ILLEGAL STATE		no more elements available in this list
Errors			unable to complete request
Compliance	mandatory		This method must be implemented.
Method		getNex	rtPositions
Description	Gets the next set of Position objects in this list. The specified amount must be less than or equal to the return from available().		
Parameters	cardinal	n	the number of Position elements requested which must be less than or equal to available()
Return	osid.hierarchy.Position[] an array of Position elements. The length of the array is less than or equal to the number specified.		
Errors	ILLEGAL_STATE		no more elements available in this list
	OPERATION_FAILED unable to complete request		
Compliance	mandatory This method must be implemented.		