

SciServer



Data model for resource access control and sharing in SciServer

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SciServer/RACM

- ▶ SciServer is a system for advanced analysis in a collaborative environment for large scientific datasets.
 - For SciServer as a science platform see GWS2
 - Overview: www.sciserver.org
 - Latest: <https://alpha02.sciserver.org>
- ▶ RACM is the **Resource Access Control Management** component of SciServer



Help Tools Query History MyDB

- Gonzalez2014a
- Guo2010a
- Guo2013a
- Henriques2012a
- Henriques2015a
- Lacey2016a
- Lagos2012a
- MField
- MillenniumII
- millimil
- miniMill
- MMSnapshots
- MPAGalaxies
- MPAHaloTrees
- MPAMocks
- Snapshots
- TSE07
- TSE08
- BigWig
- Snaptron2
- MPCORB
- eROSITA
- Stripe82_016
- City
- City16
- China
- Employment
- RACM_alpha03
- RACM_scitest12
- Astroinformatics2018

MyScratch Table (

default

MyTable

SciServer Compute Interactive Notebooks Jobs Help

DEVELOPMENT VERSION

Containers

Created At
2018-05-23 09:10:17.0
2018-05-21 14:32:32.0
2018-04-05 13:29:26.0

Create container

Important information about Compute

File System Most of the... may contain... within these... stored files...

Storage Use Storage... mounted as... Files saved... intermediate...

persistent By default, a... SciServer C...

Temporary Use Temp... failure, but e... (/home/ides... Temporary/... Compute/...

scratch By default, a... SciServer C...

Do not save your scripts

Create a new container

Container name
Please enter a name...

Domain
Interactive Docker Compute Domain

Image
ukbio
JupyterLab
LSST (New)
MATLAB R2013a
MATLAB R2016a
Python (astro)
Python + Dev (astro)
Python + Dev (turbulence)
R 3.3.0
RStudio

iMeDe
 Ocean Circulation
 Recount
 SDSS_DAS
 WFIRST Archive SIT
 paradingroup
 ukbiobank
 write-test [W]

Create

SciServer Dashboard Files Groups Resources

Files Service Create User Volume View Quotas Filter...

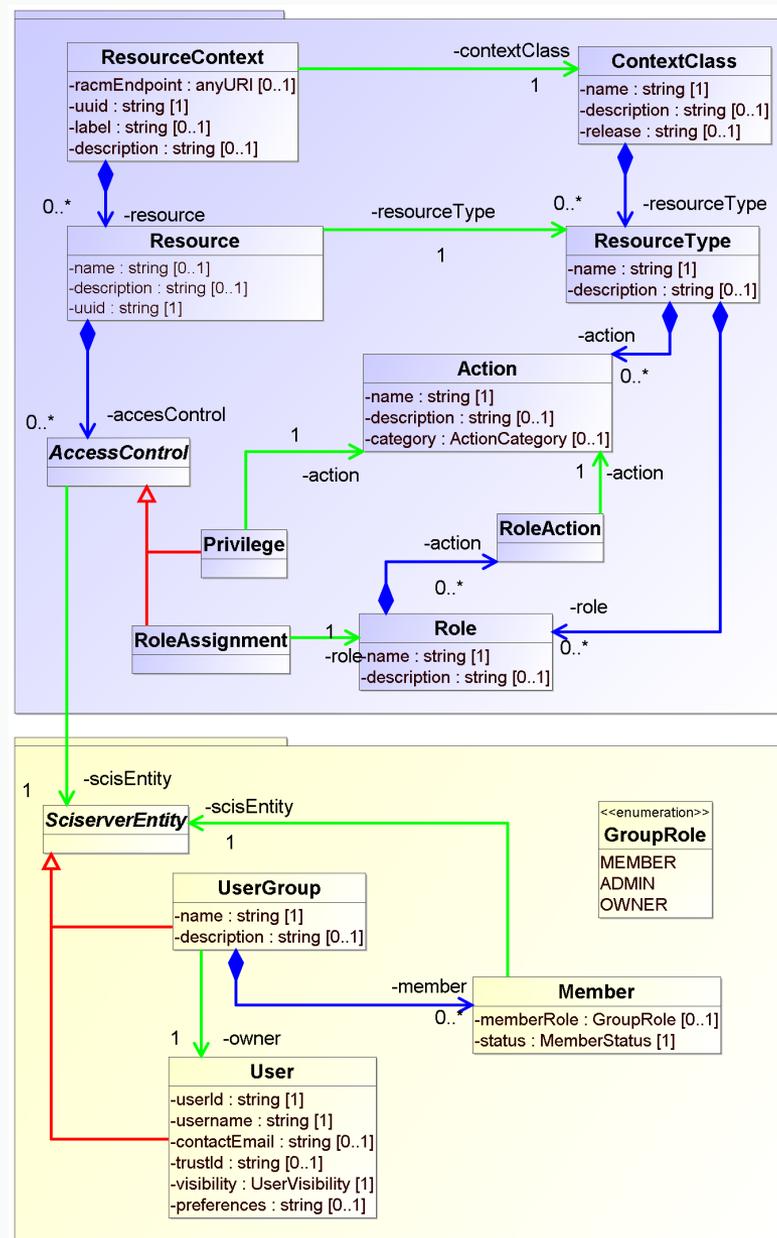
Name ↓	Root Volume	Owner
AAA_MyDemos	Storage	gerard
BaltimoreTransit	Storage	marcstein
Bernie	Storage	brandles
BurgersSharedVol	Storage	tzaki
CareyStuff	Storage	gerard
CoursewareScripts	Storage	jkim485

Resources in SciServer

- ▶ Not all public:
 - Databases in CasJobs/SciQuery
 - Including MyDB tables
 - Data Volumes
 - Docker Images
 - User Volumes
- ▶ Need to be able to restrict access to “public” data
- ▶ Need to be able to share access to “private” data with others
- ▶ Need to be able to get listing of all resources a user has access to, with actions it can perform.

RACM uses a flexible data model for representing **who** is allowed to do **which** actions on each **resource**.

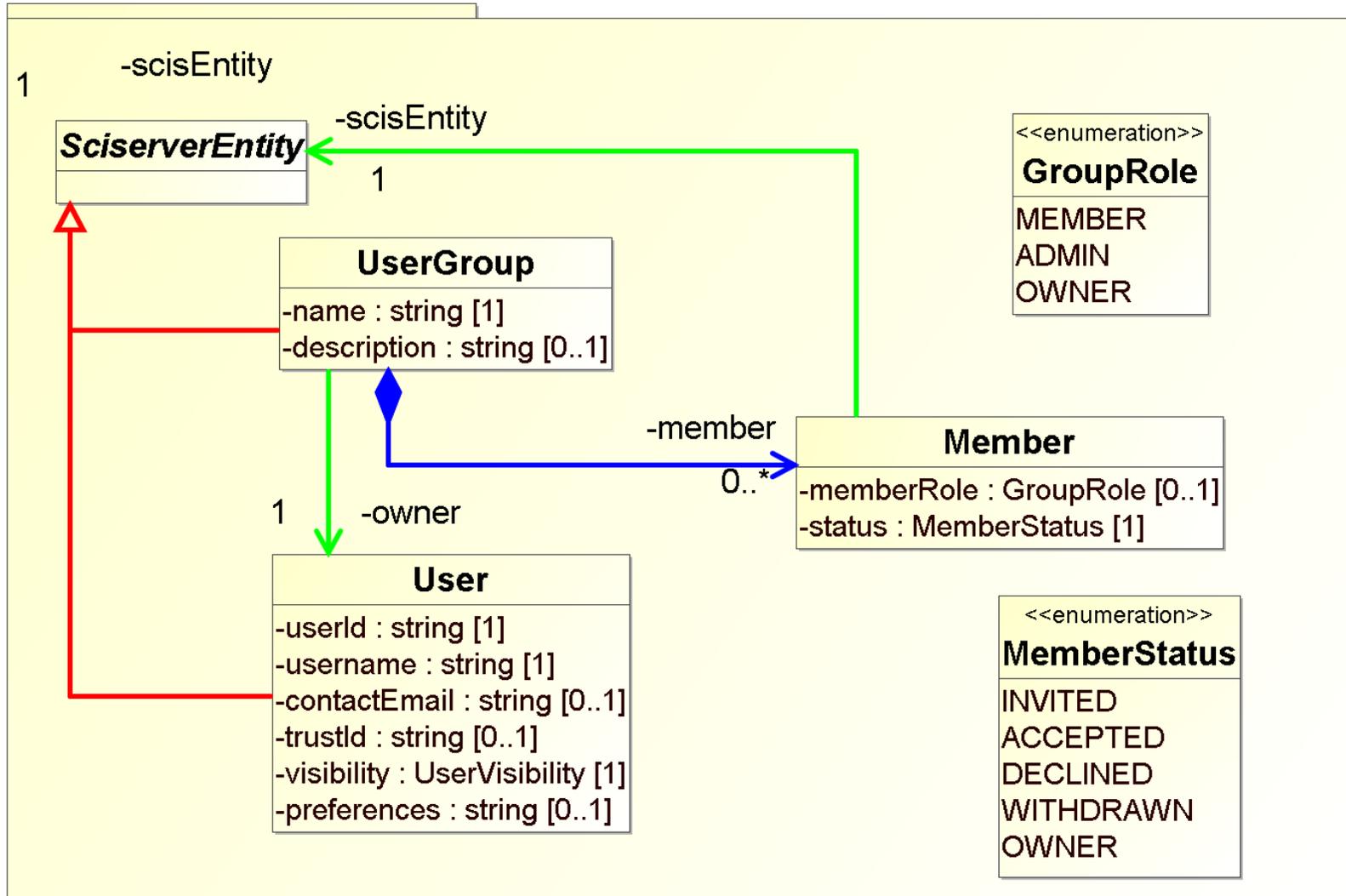
Implemented using updated version of VO-URP (Lemson & Bourges, Trieste 2008)



Core Concepts:

- ▶ Define and manage **users** and **groups**
 - Support nested groups
- ▶ Define and manage system **resources**
 - and what can be done to them
- ▶ Define and manage resource management **contexts**
 - “which application manages the resource”
- ▶ Define and manage **access controls** between user(group)s and resources

Users and Groups



Groups

- admin
- angelomele
- Astroinformatics2018-Students Delete group
- BaltimoreTransit
- BurgersStudents
- Chesapeake_group
- ChinaMigration
- city
- Cloudy_Nova
- COMPMAAdmin
- COSMOS
- demo
- DRAGN
- Example Notebooks
- FinTechAI-Group
- foobdgfvfdar
- G-Course-Teacher
- IDIES_Workshop

Astroinformatics2018-Students

Participants in the 2018 Astroinformatics Summer School <http://astrostatistics.psu.edu/su18/>

Shared Files



Lessons for Astroinformatics 2018



Shared Space for Astroinformatics 2018 Participants

Shared Volume Containers

Share volume containers with this group to see them here.

Shared Docker Images

Share docker images with this group to see them here.

Shared Databases

Share database context with this group to see them here.

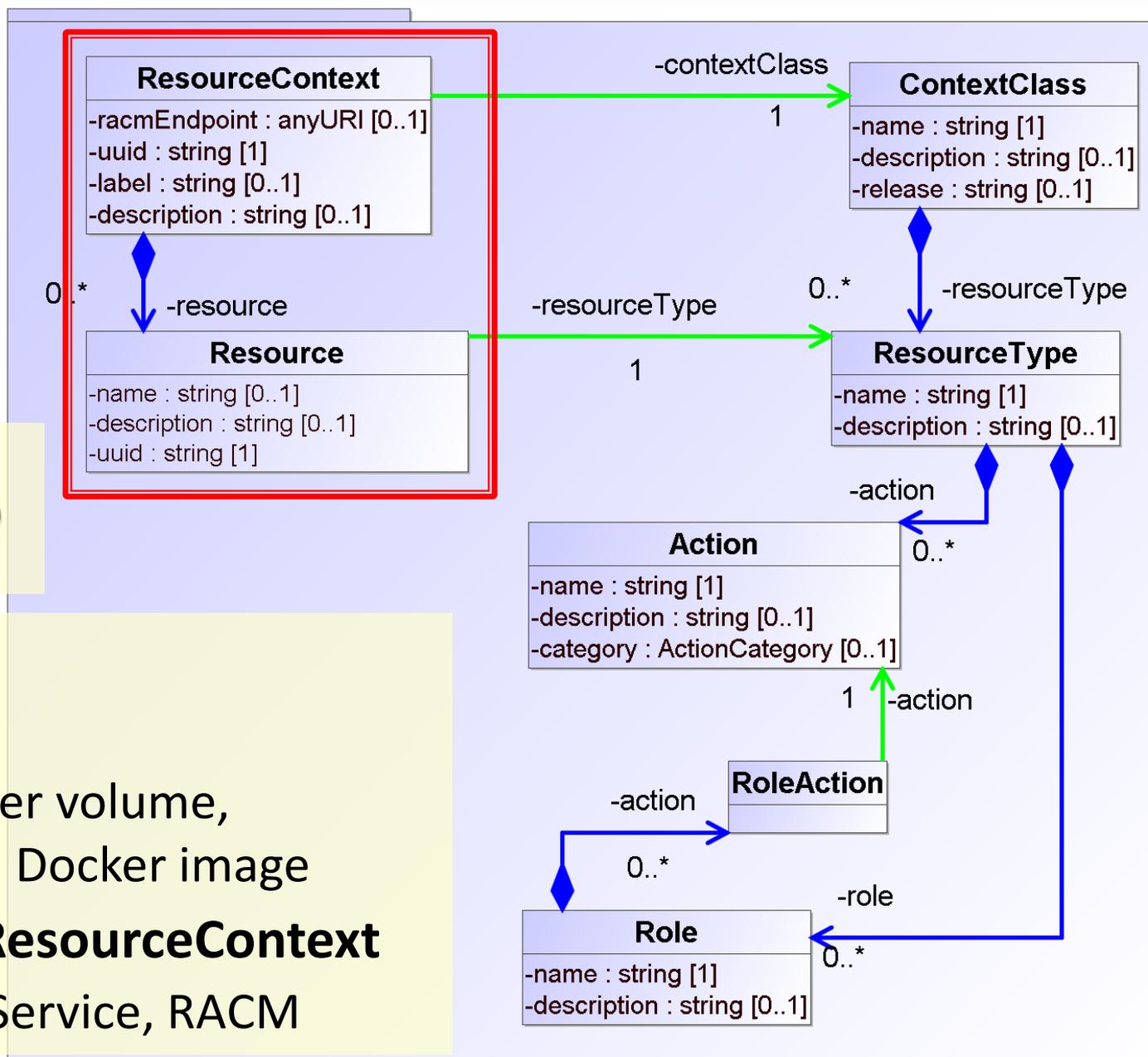
Members

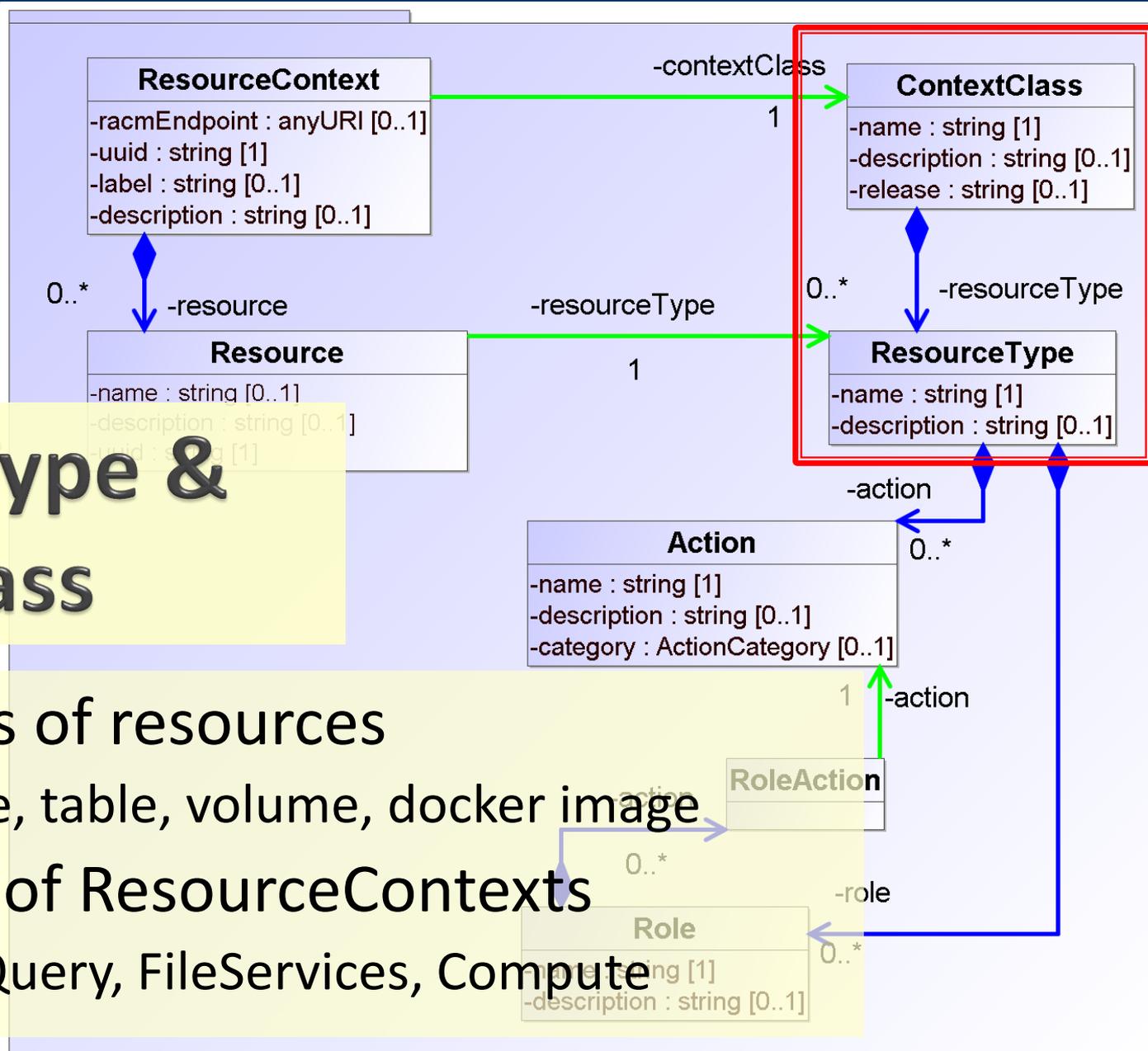
Invite new user 

gerard	OWNER
eford	ADMIN
budavari	MEMBER
ctchen	MEMBER
dmedv	MEMBER
gcaceres	MEMBER
efeigelson	INVITED
newpon	INVITED
abixel	INVITED
aglazier	INVITED
aibhleog	INVITED
alexjc	INVITED
ams7080	INVITED
andrea88	INVITED
anriv2015	INVITED
arajan6	INVITED
artembu	INVITED
astrobr	INVITED

Resource

- ▶ “things”, like
 - Database, User volume, Data volume, Docker image
- ▶ Managed by **ResourceContext**
 - CasJobs, FileService, RACM

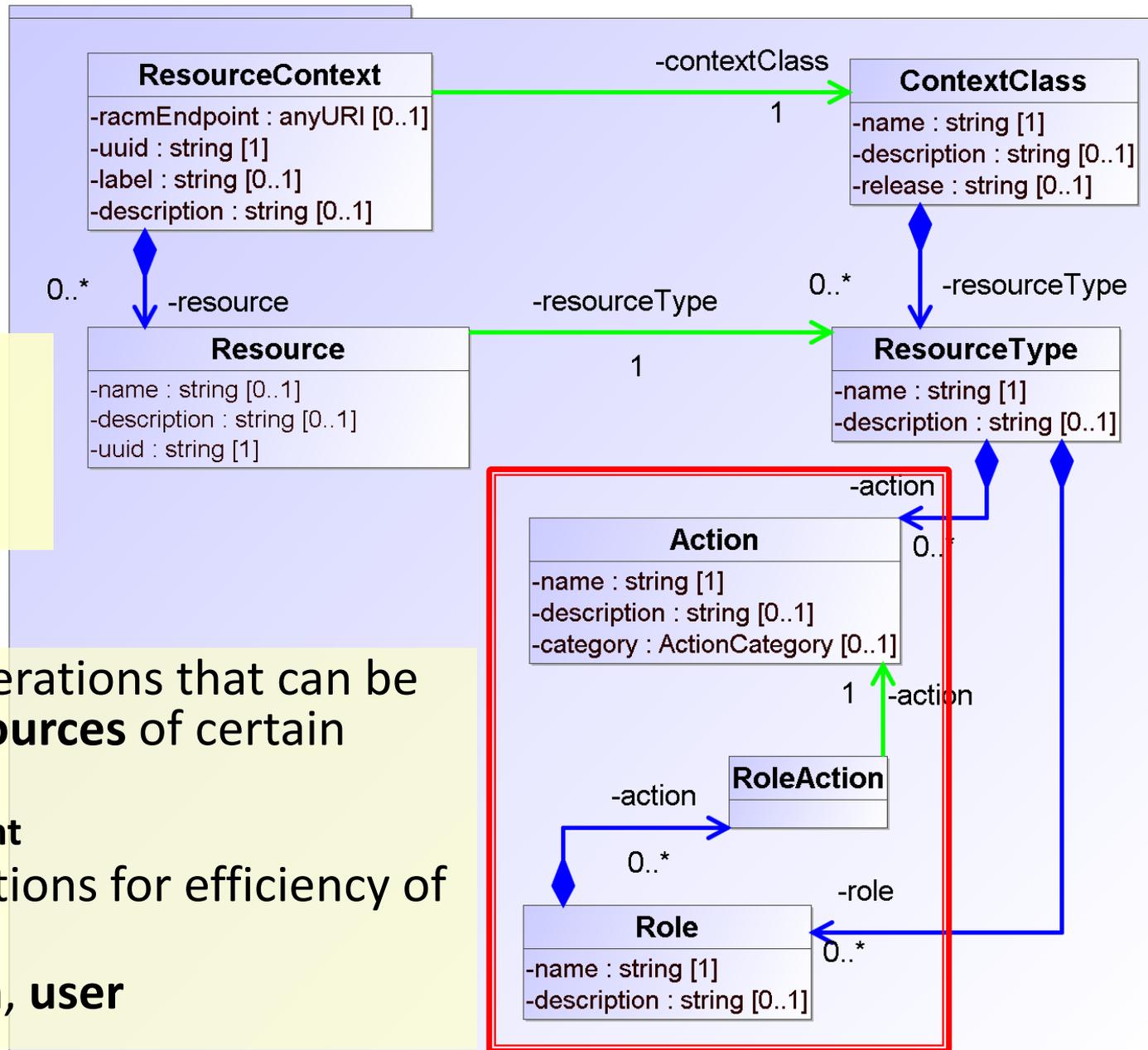




ResourceType & ContextClass

- ▶ Define types of resources
 - E.g. database, table, volume, docker image
- ▶ And classes of ResourceContexts
 - CasJobs/SciQuery, FileServices, Compute

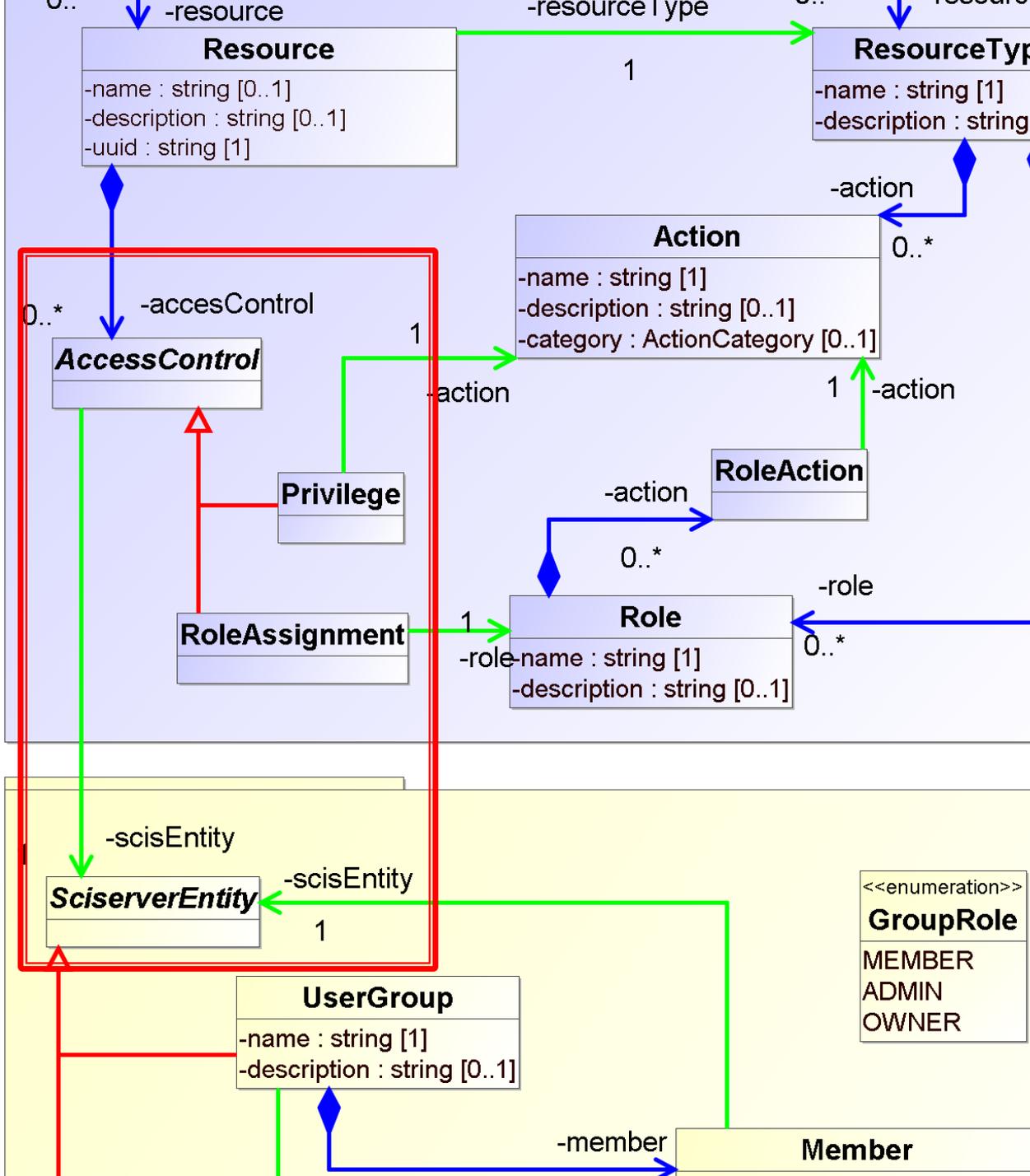
Actions & Roles



- ▶ **Actions** are operations that can be applied to **Resources** of certain **ResourceType**
 - read, write, grant
- ▶ **Roles** group actions for efficiency of association
 - **guest, admin, user**

AccessControl links
Resource /
[Action | Role] /
[User | Group]

Defining **who** can
do **what** on **what**



Files Service

Name ↓	Root Volume	Owner	
AAA_MyDemos	Storage	gerard	<input type="button" value="Share"/> <input type="button" value="Delete"/> <input type="button" value="Edit"/>
BaltimoreTransit	Storage	marcstein	
Bernie	Storage	brandles	<input type="button" value="Share"/>
BurgersSharedVol	Storage	tzaki	
CareyStuff	Storage	gerard	<input type="button" value="Share"/> <input type="button" value="Delete"/> <input type="button" value="Edit"/>
CoursewareScripts	Storage	jkim485	<input type="button" value="Share"/> <input type="button" value="Delete"/>
DECaLS_clusters	Storage	ghazaleh65	<input type="button" value="Share"/>
Demo_persistent	Storage	jkim485	
Demo_scratch	Temporary	jkim485	
G-Course-Assignment	Storage	camychhetri	
G-Course-Assignments-mrippin	Storage	mrippin	
G-Course-Homework	Storage	gerard_gm1	
G-Course-Lectures	Storage	jkim485	

Share User Volume

Available SciServer Groups And Users

Show entries

Search:

Name	ID	Type
Millennium Users	40510	GROUP

Showing 1 to 1 of 1 entries (filtered from 461 total entries)

Previous Next

Access Groups And Users

Show entries

Search:

Name	ID	Type	Permissions
Millennium Users	40510	GROUP	<input checked="" type="checkbox"/> Read <input type="checkbox"/> Write <input type="checkbox"/> Grant <input type="checkbox"/> Delete

Showing 1 to 1 of 1 entries

Previous Next

Add

Save Changes

Files Service



Name ↓

- AAA_MyD
- CareyStuff
- G-Course-
- Millennium
- OPINAS
- PangeoCo
- UCLA
- eROSITA_scratch
- foobar
- gerard_IDIES_Workshop_HPC_1
- gerard_Tweets
- gerard_VODML
- gerard_Virgo

Name	Type	Owner
Temporary	Temporary	gerard
Temporary	Temporary	gerard
Storage	Storage	gerard

- delete Edit

Wonkish: “class actions”

- ▶ **Action** MUST be defined on a **ResourceType**
- ▶ Some operations are more context level:
 - “create”, “define”
 - For those we define a “__rootcontext__” ResourceType on each ContextClass that needs such actions
- ▶ Similarly for access controls: must be defined on Resource
 - Access controls for “class actions” are on a __rootcontext__ Resource defined on ResourceContext

Flexibility and Application

- ▶ REST API for all major features
- ▶ Abstract model allows new resource types to be defined
- ▶ Can be used by external applications as an access control framework for their own resource types, actions etc
- ▶ Example notebook for creating “course ware” environment
- ▶ Documentation in preparation

Grantable Resources

In this pre-production release, this page provides a listing of the resources you are able to grant to other users (for example, to allow them to write to a user volume, or make containers with your Docker images).

Show entries

Search:

Context Class ▲	RACM Context Link	Resource Type	Resource - Name	Resource - PubID	
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	__rootcontext__	__rootcontext__	__rootcontext__	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	DockerImage	MATLAB	8	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	DockerImage	Python	4	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	DockerImage	R	5	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	VolumeContainer	FinTechAI	15	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	VolumeContainer	Indra Simulations	17	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	VolumeContainer	Kepler	59	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	VolumeContainer	MEDE MG Compression	55	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	VolumeContainer	mede_data	49	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	VolumeContainer	mede_work	46	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	VolumeContainer	Ocean Circulation	14	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	VolumeContainer	paradimgroup	13	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	VolumeContainer	Recount	12	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	VolumeContainer	SDSS DAS	2	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	VolumeContainer	UK Biobank	52	<input type="button" value="Grant"/>
DockerComputeDomain	https://alpha02.sciserver.org/compute/api/domains/2/	VolumeContainer	UK Biobank - Refract	62	<input type="button" value="Grant"/>

Thank you

