



Astronomy ESFRI and Research Infrastructure Cluster

ASTERICS - 653477



INAF Data ANALYSIS Software for CTA

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3rd ASTERICS – OBELICS Workshop, Cambridge, UK 23-25 October 2018, Cambridge, UK.

Overview

CTA – AUTHENTICATION AND AUTHORIZATION INFRASTRUCTURE API

RELEASE 2018

Developer: INAF | Licence: Freely available | Website: | Repository: CTA - Authentication and Authorization Infrastructure API source code

The INAF CTA Authentication and Authorization Infrastructure API provides a set of resources and digital assets by means of a RESTful API (based on eduGAIN inter-federation) which offers a proper environment for end users.

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CTA – WORKFLOW MANAGEMENT SYSTEM API RELEASE 2018

Developer: INAF | Licence: Freely available | Website: | Repository: CTA - Workflow Management System API source code

The INAF CTA science gateway aims at providing a web instrument for high energy astrophysics. It leverages open source technologies giving web access to a set of tools and software widely used by the CTA community. An extended (though not exhaustive) list of tools provided by this technology embrace XANADU software package, GammaLib & ctools, Fermi Science Tools, Aladin, IRAF. The gateway is based on the Liferay platform. It provides a Workflow Management System (WMS) with a customizable graphical web user interface and a web-desktop environment.

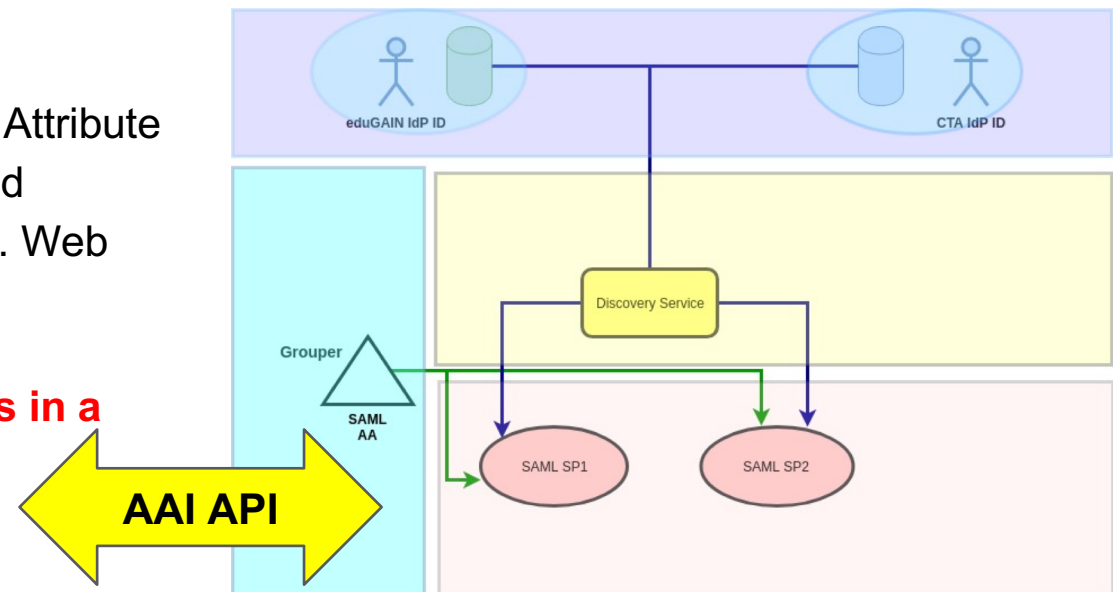
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CTA AAI API

The current implementation of the INAF-CTA Authentication and Authorization Infrastructure provisions more than 1000 consortium identities and is releasing a persistent and non-reassignable ID as requested by CTA user requirements. **Authentication** of Observers and Guest Users can be achieved also using eduGAIN inter-federation.

The **Authorization** is performed through a dedicated Attribute Authority which grants the definition, management and provisioning of roles based on groups and subgroups. Web interfaces are provided for group administration.

Web services allow access to those functionalities in a service oriented architecture.



CTA Authorization API

Interface with the Attribute Authority is implemented through **web services** which exposes the entire business logic through SOAP and REST APIs.

Useful operations include:

- **Stem management**, such as: *findStems*; *stemSave*; *stemDelete*
- **Membership management**, such as:
 - *addMember*: assign a member to a group;
 - *deleteMember*: unassign a member from a group;
 - *getMembers*
- **Group management**, such as: *getGroups*: list groups for a given subject; *groupSave*: create or update a group; *groupDelete*: delete a group

CTA Authorization API

The CTA prototype for Proposal Handling System offers an example of implementation of a system leveraging the INAF Attribute Authority Services.



The Attribute Authority web services allow to manage submissions of Guest Observer proposals from compilation and transmission to their valuation and scheduling.

The role-based authorization is extensively used to identify e.g. **Observers** (astronomers that can submit proposals to perform observations) or **Reviewers** (members of the time allocation committee who will review the submitted proposals).

In this case a new stem is created for each proposal id (e.g. proposalId = 003), new groups are created within the proposal to describe user roles (e.g. “PI” and “CO-I” groups) and new members are assigned to the groups.

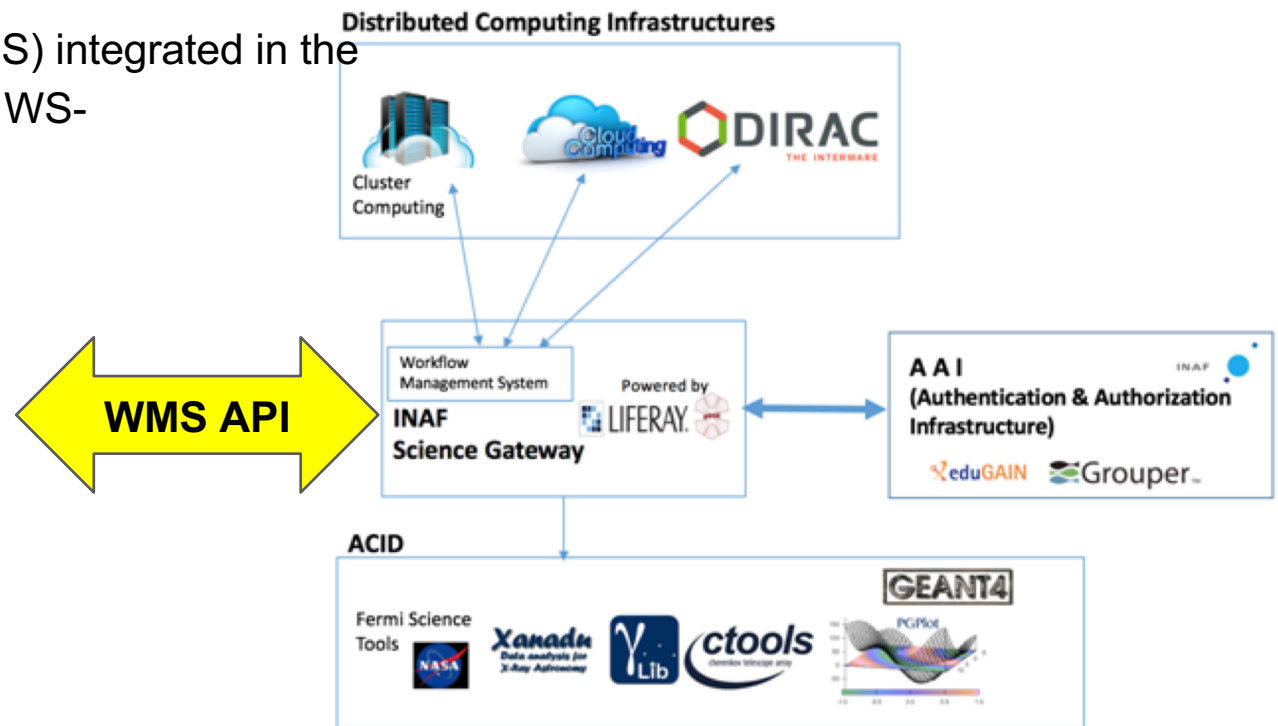
Endpoint: <https://grouper.oact.inaf.it/grouper-ws>

```
curl -v -H "Content-Type: text/x-json" --user $SECRET -d '{ "WsRestAddMemberRequest":{  
  "subjectLookups":[{"subjectId":"$USER","subjectSourceId":"CTA_LDAP"} ], "wsGroupLookup":{  
  "groupName": "$GROUP"}}}' -X POST $ENDPOINT/groups
```

CTA WMS API

The Workflow Management System (WMS) integrated in the INAF CTA Science Gateway is based on WS-PGRADE/gUSE.

It seamlessly enables the execution of astronomical and physics workflows (and jobs) on major platforms such as: **DIRAC** (Distributed Infrastructure with Remote Agent Control) **INTERWARE**, **ARC**, **Globus**, **gLite**, **UNICORE**(Uniform Interface to Computing Resources), **PBS** as well as **web services** or **Clouds**.



CTA WMS API

- Interface with the WMS is implemented through web services which exposes the whole life-cycle of a workflow management through SOAP and REST APIs.
- The interface provides functionalities for workflow submission, obtaining status during execution in short or in detailed format, for stopping, suspending, or rescuing the workflow, and for downloading outputs.
- Useful operations include:
 - **submit**: Submits the workflow to the science gateway WMS
 - **info**: access the status of the workflow (workflow statuses include: *submitted/running/finished/error/suspended/invalid*)
 - **stop**: aborts and deletes the workflow
 - **download**: downloads the produced results of the workflow

CTA WMS API

The API may be employed by external applications to run pre-defined workflows on CTA computing resources.

Endpoint: <https://cta-sg.oact.inaf.it/wspgrade/RemoteServlet>

A new RESTful API is under implementation to ease the authentication process for Cloud resources.

```
curl -k -F m=submit -F pass=$SECRET -F wfdesc=@workflow.xml -F inputzip=@inputs.zip -F portmapping=@portmapping.txt -F certs=@certs.zip $ENDPOINT
```


Acknowledgement

H2020-Astronomy ESFRI and Research
Infrastructure Cluster

(Grant Agreement number: 653477)