INAF-OATs Technical Report 197/2015

VAPE Virtual observatory Aided Publishing for Education

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http://ia2-edu.oats.inaf.it:8080/vape

VAPE is an application for the publication of educational data in the Virtual Observatory (VO). VAPE has been developed by IA2 (<u>http://ia2.oats.inaf.it</u>). Thanks to VAPE, institutes managing educational telescopes can publish their data in the VO without facing the complexity of (more complete) professional tools. The creation of an educational data archive will a) provide teachers performing observations with an educational telescope to easily store and access their observations, b) make observations available to teachers that have otherwise no access to a telescope. An added advantage of the publication in VO is the availability of many free tools for displaying and/or analyzing data.

The main steps for the service generation and data publication are: a) user (institute) registration, b) telescope(s) and instrument(s) registration, c) insertion of the information about the service to be linked to the telescope and d) the submission of a test file. After service generation it will be possible to proceed with image publication and data querying through VO tools.

<u>Step 1</u>: Register the institute (e.g. Astronomical Observatory of ...) through sign up.

VAPE Home Contact us			You are not logged in
	Welcome to the	e VAPE website	
	Please sign Username or e-mail address Password Sign in	Forgotten password	
	eurozzar (Ubs))	(e)	

Insert the requested information in the registration window. Attention: the *username* can not be modified.

VAPE Home Contact us			You are not logged in
	Please provide t	ne necessary data	
	Arthur Dent Osservatorio Astronomico Galassia di Andromeda		
	OA_M31		
	arthur.dent@oa-m31.and	arthur.dent@oa-m31.and	
	Planeta 2014-1b, Braccio a Spirale 2, Andromeda		
	(+00) 123 456 789		
	Sign up	Cancel	
		and the second	
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Send the information and wait for the confirmation e-mail. After having received the

confirmation e-mail, you may sign-in for the first time. By clicking on the username in the top right corner of the window you will open the *User* administrator page, where you will be able to modify/save your own data.

VAPE Home Contact us	L	ogg d in as OA_M31 Logout
	User administration page	
supervisor	Arthur Dent	
fullname	Osservatorio Astronomico Galassia di Andromeda	
username	OA_M31	
email	giulia.lafrate@gmail.com	
address	Pianeta 2014-1b, Braccio a Spirale 2, Andromeda	
telephone	(+00) 123 456 789	
	Save metadata Change password Cancel	
		♠▲
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<u>Step 2</u>: add a new telescope. In the VAPE main window select Add new telescope.

VAPE Home About Contact us	Logged in as OA_M31 Logout
TELESCOPES AND INSTRUMENTS	
SERVICES Add new telescope Add new service	Entity details Please use the navigation list on the left to select an entity
erozor Obsi	<u>به</u> ک

Insert the requested information. Attention: the *shortname* can not be modified.

VAPE Home About Contact us		Logged in as OA_M31 Logout
TELESCOPES AND INSTRUMENTS	New telesco	ре
SERVICES	Newton 150cm	
Add new telescope Add new service	Telescopio Newton Cupola Est	
	Save metadata	

<u>Step 3</u>: **add a new instrument**. A telescope can have more than one instrument, e.g. a camera for imaging and a spectrograph. The telescope created in step 2 appears in the left column of VAPE, by selecting it, it is possible to add a new instrument through *Add new instrument*.

VAPE Home About Contact us			Logged in as OA_M31 Logout
Newton 150cm		Newton 150cm	
SERVICES	name	Newton 150cm	
Add new telescence	shortname	N_150	
Add new telescope Add new service	description	Telescopio Newton Cupola Est	
		Save metadata Add new instrument	
ELEOTOF (USA)			

Insert the requested information and save them through *Save metadata*. Attention: the *shortname* can not be modified.

VAPE Home About Contact us			Logged in as OA_M31 Logout
TELESCOPES AND INSTRUMENTS Newton 150cm		New instrument	
SERVICES	name	AHRG	
Add new telescope Add new service	shortname	AHRG	
	description	Andromeda High Resolution Galaxy camera Save metadata	
CUROZET (UBA)		(•) 🚈	

At the end a window with the confirmation of the instrument addition appears.

VAPE Home About Contact us	Logged in as OA_M31 Logout
TELESCOPES AND INSTRUMENTS Newton 150cm AHRG	Operation successful Instrument created successfully.
SERVICES Add new telescope Add new service	
LIFOZOT (UAA)	

<u>Step 4</u>: setting up the service. In the left column select Add new service and insert the requested information.

- *VO Title*: title of the service, with clear references to institute, telescope, instrument, aim (educational), etc;
- VAPE Shortname and VO Shortname can be the same;
- *VO Description*: detailed description of the educational activity, with information on methods, instruments, user (students, teachers, ...), etc.;
- *protocolType*: at the moment only SIAP (simple image access protocol) is available, in the future SSAP (simple spectra access protocol) will be added;
- VO Subject: some keywords of the service, separated by "#";
- VO ReferenceUrl: web site with the description of the educational activity.

VAPE Home About Contact us		Logged in as OA_M31 Logout
TELESCOPES AND INSTRUMENTS Newton 150cm AHRG	New service	
	VO Title	OA_M31 AHRG educational siap service
SERVICES	VAPE Shortname	AHRG_siap
Add new telescope Add new service	VO Shortname	AHRG_siap
	VO Description	II telescopio robolico didattico dell'Osservatorio Astronomico della Galassia di Andromeda offre al ragazzi andromediani la posibilità di riprendere immagini di altri mondi, andromediani e alieni (terrestri). Gli strumenti a disposizione sono, ecc., ecc.,
	Protocol Type	siap
	VO Subject	educational#stars#galaxies#planets#aliens
	VO Reference URL	http://www.oa_m31.and/edu
	Connected instruments:	☑ AHRG
		Save metadata
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Save the information by clicking on *Save metadata*. VAPE moves to the next window where a test FITS file is requested in order to proceed with the service creation.

VAPE Home About Contact us	Logged in as OA_M31 Logout
TELESCOPES AND INSTRUMENTS Newton 150cm AHRG	OA_M31 AHRG educational siap service
SERVICES OA_M31 AHRG educational slap service	Service metadata Service schema descriptor History of uploaded files
Add new telescope Add new service	
EUROZOF (V)	

At this point you have to verify that your FITS files are acceptable for publication in the VO through VAPE and, if not, to modify them according to the rules below:

- 1) verify with FITS Verify (<u>http://fits.gsfc.nasa.gov/fits_verify.html</u>) that files fit the standards of FITS format
- 2) if the following keywords are not already present, insert them in the FITS header OBJECT observed object

OBJ_TYPE object type: *"astro"* for stars, deep sky, etc; *"sun"* for the Sun; *"planetary"* for the Solar System objects

OBSERVER	observer (you or the class)
TELESCOP	telescope used for observations - this keyword must match the
	telescope shortname previously inserted in VAPE
INSTRUME	instrument used for observations – this keyword must match
	the instrument shortname previously inserted in VAPE and
	linked to the service
INSTITUT	institute performing the observations
PURPOSE	"edu" in order to tag observations as educational

Once your FITS files satisfy the above requirements, you may proceed uploading the test file. Specify for each of the following variables RA, DEC, Date, Image ID and Pixel Scale the corresponding keyword of your file header. If needed modify the information using arithmetical operations and/or constants.

Tips&Tricks: in order to perform arithmetical operations insert the desired function (from the list menu *functions*) and then insert inside it the keywords (from the list menu *Fits keys*) and/or the constants (from the list menu *Constant*). To delete a field use *Undo*.

VAPE Home About Contact us		Logged in as OA_M31 Logout
TELESCOPES AND INSTRUMENTS Newton 150cm AHRG	OA_M	I31 AHRG educational siap service
	Service metadata Ser	vice schema descriptor History of uploaded files
SERVICES		
OA_M31 AHRG educational slap service		Fits keys Functions Constant Undo
Add new telescope Add new service	RA [deg] =	OBJCTRA
		Fits keys Functions Constant Undo
	DEC [deg] =	OBJCTDEC
		Fits keys ▼ Functions ▼ Constant Undo
	Date [MJD] =	(JD - 2400000.5)
		Fits keys ▼ Functions ▼ Constant Undo
	Image ID =	OBJECT
		Fits keys ▼ Functions ▼ Constant Undo
	Pixel Scale - X [deg/px] =	(PIXSCALE / 3600)
		Fits keys ▼ Functions ▼ Constant Undo
	Pixel Scale - Y [deg/px] =	(PIXSCALE / 3600)

At the end save the metadata: a confirmation page appears. An email message will confirm the activation of the service.

<u>Step 5</u>: **upload the images to be published**. Select your service in the VAPE main window. A window will pop-up where you will be able to modify title, description, keywords and reference web site of the service. In order to upload new images select *Upload new files*.

VAPE Home Contact us		Logged in as OA_M31 Logout	
TELE SORIE S AND IN EXTURISENTS Newton 150cm AHRO	OA_M31 AHRG educational siap service		
test	Service metadata Se	rvice schema descriptor History of uploaded files	
OA_MS1 AHRG educational sizp service	Status	approved	
Add new telescope Add new service	VO Title	DA_M31 AHRG educational sisp service	
	VAPE Shortname	AHRG_siap	
	VO Shortname	AHRG_siap	
	VO Identifier	ivo://ia2.inaf.it/edu/OA_M31/AHRG_sisp	
	VO Description	Il Mascopio Indelico didatto dellamo A036 Osservatorio Astronomico della Galassia di Andromada offre al regazzi andrometiani la posibilità di ripendere energiani alla formazziani e allamo (energiani).	
	Protocol Type	siap	
	VO Subject	educational#stars#galaxies#planets#aliens	
	VO Reference URL	http://www.co_m31.and/edu	
	VO Type	archive	
	VO Content Level	educational	
	Access URL	Waiting for VO-Dance	
	Schema name	Set by NADIR	
	Table or view	AHRG_siap_view	
	Connected instruments:	[]/AHRG □]est	
		Save metric ta Upplaal new files	
65057 🕠		💌 😹	

A pop-up window will confirm the end of the upload procedure.

VAPE Home About Contact us		Logged in as OA_M31 Logout
TELESCOPES AND INSTRUMENTS Newton 150cm AHRG	Upload finished 1 files out of 1 successfully sent	
services OA_M31 AHRG educational slap service	Succesfully uploaded files: • m15_andromeda.fit	
Add new telescope Add new service		
ELIFOZOT		

During the upload, files are renamed according to the schema OBJECT_OBS_DATE.fits and a new keyword with the original file name is added to the file header.

N.B.: when a service is approved its state changes from *requested* to *approved*. Even if approved by VAPE, the service has to be registered in the VO registries before images become available in the VO. Wait until the URL appears in the field *accessURL*.

<u>Step 6</u>: access the images. Images published with VAPE enter the Virtual Observatory – VO (<u>http://www.euro-vo.org</u>) and are accessible through VO tools, e.g. Aladin (free download from <u>http://aladin.u-strasbg.fr</u>).

Some examples on how to use Aladin for educational purposes are available on the web site <u>http://wwwas.oats.inaf.it</u> in the download section.

How to access the images of a specific service (e.g. SVAS of INAF OATs) using Aladin:

Open Aladin

File -> Load astronomical image -> Aladin image server

Select the *all_VO* tab and insert in the field *Object* the name or the coordinates of the object you want to search for.

In order to get all images published by a specific service insert 0:0:0 0:0:0 in the field *Object* and 180° in the field *Radius*.

Select Images only (deselect Catalogs and Spectra) and open the Detailed list.

Ø Server sele	ctor	
	Others Office Callivo Atch to V Tools	
Image servers	· vo di ssevery too l	Catalog servers
Aladin images		
<i>¶</i> Sky∨iew	Servers V Images Catalogs Spectra Detailed list	Gurveys
		Wissions
Sloan		VIUI 200
DSS		
M A		SkyBot
Archives		Others
Others		
	Press it to stop the processing => Stop it	
	Reset Clear SUBMIT Close ?	

A window with the list of all available services which have images of the searched object appears.

🧭 Se	erver list			
	Check/uncheck the servers concerned by the ALL VO discovery mode			
	Select all Unselect all Filter: Go Reset			
Imag	ge servers			
1)	The Aladin image server (CDS/Strasbourg) - DSS/MAMA/2MASS/I ?			
2)	The UKIRT DR9 Infrared Deep Sky Survey			
3)	SDSS DR7 images			
4)	W Multimission Archive at STScI (MAST)			
5)	V Hubble Legacy Archive Footprint Data (HLA)			
6)				
7)	✓ Hubble press release images			
8)	VO-Paris Southern Atlas (VOPSAT)			
9)	🕼 Generic SIA query			
	SUBMIT Close			

Insert the name (or a part of it) of the desired service (i.e. SVAS) in the field *Filter* and click *Go*.

Server list	• ×
Check/uncheck the servers concerned by the ALL VO discovery mode	
Select all Unselect all Filter: SVAS Go	Reset
Image servers	
1) 👿 INAF-OATs SVAS Educational Images SIAP service	?
Catalog servers	
Spectra servers	
SUBMIT Close	

The botton "?" shows the information about that service inserted in VAPE. Select the service, submit and close the window.

The list of images provided by the selected service appears in the server selector window.

Ø Server sele	ctor		
	Others Office Sail Of Swatch	Tools	_
Image servers	• VO discovery tool 🔞		Catalog servers
Aladin images	Target (ICRS, name) 0:0:0 0:0:0 Radius 180°	Grab coord	
SkyView	Servers VImages Catalogs Spectra Detailed list		Burveys
		•	Rissions
Sloan	INAF-OATS SVAS Educational Images SIAP service		
D \$S	m31 50.0" x 37.6" m57 50.0" x 37.6" PSN ngc5936 50.0" x 37.6"	E	
	PSN_ugc10313 50.0" x 37.6"		SkyBot
Archives	PSN_ugcl0313 50.0" x 37.6" == sn2013dd 50.0" x 37.6"		Others
Others	sn2013df 50.0" x 37.6"		
	Press it to stop the processing => Stop it		
Reset Clear SUBMIT Close			

Double click on a image name in order to visualize the information saved in the file header. Select an image and submit to load it in Aladin.

