



VisTAP/ObsTAP services & SciApp to improve coordination

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Slide 1



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Observatory services: Standardisation

- There is a set of common information available in all observatories web pages
- This information is accessible through web forms and it is presented in static web pages

Why don't we standardise the information exchange to improve the efficiency to plan observations or coordinate observation campaigns?

MOVE FROM OBSERVATORY TOOLS TO OBSERVATORY SERVICES

Identify which observatory tools could be easily transform in services (if they are not already a service)

Target visibility checks

Scheduled and planned observation logs

- Standardise the input parameters
- Standardise the output information and format



Virtual Observatory protocols

Slide 2



ObsTap as existing service

The combination of the ObsCoreDM with TAP is referred to as an ObsTAP service.

Definition of the core components of the Observation data model that are necessary to perform data discovery when querying data centres for astronomical observations of interest ...

Idea:
 Extend this service or create a new standard to be used for visibility check and scheduled observation information

obs_id	unitless	String	Observation ID	OBS_ID
obs_publisher_id	unitless	String	Dataset identifier given by the publisher	?
access_url	unitless	String	URL used to access (download) dataset	TBD
access_format	unitless	String	File content format (see in App. Error! Reference source not found.)	NULL
access_estsize	kbyte	integer	Estimated size of dataset in kilo bytes	NULL
target_name	unitless	String	Astronomical object observed, if any	"Target" ?
s_ra	deg	double	Central right ascension, ICRS	RA
s_dec	deg	double	Central declination, ICRS	DEC
s_fov	deg	double	Diameter (bounds) of the covered region	Fixed value for each XMM-Newton Instrument
s_region	unitless	String	Sky region covered by the data product (expressed in ICRS frame)	TBD, not easy for RGS



International
 Virtual
 Observatory
 Alliance

Observation Data Model Core Components and its Implementation in the Table Access Protocol





The XMM-Newton & Integral: Visibility Check Use Case

XMM-Newton

[http://xmm.esac.esa.int/XMMVisCheck?](http://xmm.esac.esa.int/XMMVisCheck?startDate=11-10-2017&minduration=12.000&coordinates=equatorial&ra=192.063458&dec=17.77394)
startDate=11-10-2017&
minduration=12.000&
coordinates=equatorial&
ra=192.063458&
dec=17.77394

INTEGRAL

[http://integral.esac.esa.int/IntegralVisCheck?](http://integral.esac.esa.int/IntegralVisCheck?startDate=11-10-2017&minduration=12.000&coordinates=equatorial&ra=192.063458&dec=17.77394)
startDate=11-10-2017&
minduration=12.000&
coordinates=equatorial&
ra=192.063458&
dec=17.77394

Standard REST web service

json, xml or votable reponse

Client visualization

```
← → xmm.esac.esa.int/XMMVisCheck?ra=321&dec=34&minDuration=5000&startdate=20-Dec-2017&enddate=20-Dec-2018&coordinates=equatorial
[{"SolarA": "89.3", "Rev": "3293", "VisStar": "2017-12-01 10:19", "AstroA": "241.2", "VisEnd": "2017-12-03 01:12", "StarPh": "0.12", "Round": "130000", "VisDur": "139962", "EndPh": "0.93"},
{"SolarA": "87.9", "Rev": "3294", "VisStar": "2017-12-03 10:11", "AstroA": "239.7", "VisEnd": "2017-12-05 00:54", "StarPh": "0.12", "Round": "130000", "VisDur": "139376", "EndPh": "0.93"},
{"SolarA": "86.5", "Rev": "3295", "VisStar": "2017-12-05 10:05", "AstroA": "238.2", "VisEnd": "2017-12-07 00:47", "StarPh": "0.12", "Round": "130000", "VisDur": "139318", "EndPh": "0.93"},
{"SolarA": "85.1", "Rev": "3296", "VisStar": "2017-12-07 09:59", "AstroA": "236.8", "VisEnd": "2017-12-09 00:39", "StarPh": "0.12", "Round": "130000", "VisDur": "139189", "EndPh": "0.93"},
{"SolarA": "83.7", "Rev": "3297", "VisStar": "2017-12-09 09:53", "AstroA": "235.3", "VisEnd": "2017-12-11 00:31", "StarPh": "0.12", "Round": "130000", "VisDur": "139045", "EndPh": "0.93"},
{"SolarA": "82.3", "Rev": "3298", "VisStar": "2017-12-11 09:46", "AstroA": "233.8", "VisEnd": "2017-12-13 00:12", "StarPh": "0.12", "Round": "130000", "VisDur": "138334", "EndPh": "0.92"},
{"SolarA": "80.9", "Rev": "3299", "VisStar": "2017-12-13 09:39", "AstroA": "232.3", "VisEnd": "2017-12-15 00:03", "StarPh": "0.12", "Round": "130000", "VisDur": "138278", "EndPh": "0.92"},
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{"SolarA": "78.1", "Rev": "3301", "VisStar": "2017-12-17 09:23", "AstroA": "229.2", "VisEnd": "2017-12-18 23:47", "StarPh": "0.12", "Round": "130000", "VisDur": "138228", "EndPh": "0.92"},
{"SolarA": "76.7", "Rev": "3302", "VisStar": "2017-12-19 09:17", "AstroA": "227.7", "VisEnd": "2017-12-20 23:29", "StarPh": "0.12", "Round": "130000", "VisDur": "137542", "EndPh": "0.92"},
{"SolarA": "75.4", "Rev": "3303", "VisStar": "2017-12-21 09:12", "AstroA": "226.1", "VisEnd": "2017-12-22 23:21", "StarPh": "0.12", "Round": "130000", "VisDur": "137392", "EndPh": "0.92"},
{"SolarA": "74.0", "Rev": "3304", "VisStar": "2017-12-23 09:06", "AstroA": "224.5", "VisEnd": "2017-12-24 23:03", "StarPh": "0.12", "Round": "130000", "VisDur": "136627", "EndPh": "0.92"},
{"SolarA": "72.7", "Rev": "3305", "VisStar": "2017-12-25 08:59", "AstroA": "222.9", "VisEnd": "2017-12-26 22:54", "StarPh": "0.12", "Round": "130000", "VisDur": "136509", "EndPh": "0.92"},
{"SolarA": "71.6", "Rev": "3306", "VisStar": "2017-12-27 08:52", "AstroA": "222.3", "VisEnd": "2017-12-28 01:42", "StarPh": "0.12", "Round": "60000", "VisDur": "60634", "EndPh": "0.48"}]
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INTEGRAL	Rt	Rev 1889	Rev 1890	Rev 1891	Rev 1892	Rev 1893	Rev 1894	Rev 1895	Rev 1896	Rev 1897	Rev 1898	Rev 18
XMM					Rev 32	Rev 32	Rev 32	Rev 32	Rev 32	Rev 32	Rev 33	Rev 33
	23	25	27	29	1	3	5	7	9	11	13	15
	November 2017				December 2017							





The XMM-Newton & Integral: Observation Info Use Case

XMM-Newton

<http://xmm.esac.esa.int/XMMVisCheck?coordinates=equatorial&ra=192.063458&dec=17.77394>

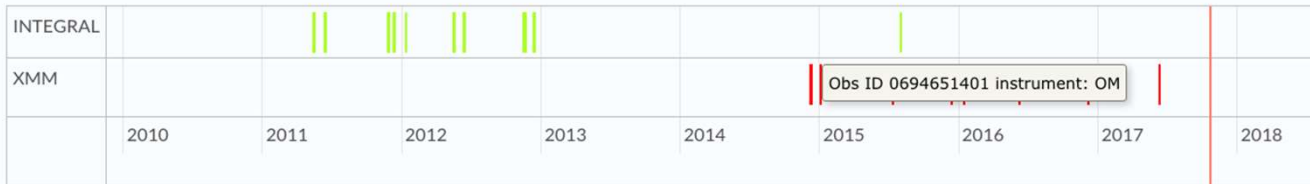
INTEGRAL

<http://integral.esac.esa.int/IntegralVisCheck?coordinates=equatorial&ra=192.063458&dec=17.77394>

Standard REST web service

json, xml or votable reponse

Client visualization



Previous and next steps



Actions already taken:

- *Presented during the last ESA/ESO Operations meeting at ESAC (Oct-2017)*
- *Informal presentation in the last IVOA meeting (Chile Oct-2017) Data Model Panel.*
 - *The idea was very well received for all groups, in particular LSST team.*
- *First contacts with potential interested groups (NuSTAR)*

Goal:

- *Prepare first IVOA working note in collaboration with other interested groups*
- *Present this note in the next IVOA interoperability meeting (end of may 2018)*



ESASky v3.0: Time-Domain exploration



Constraint visibility checker option

Footprints for scheduled observations

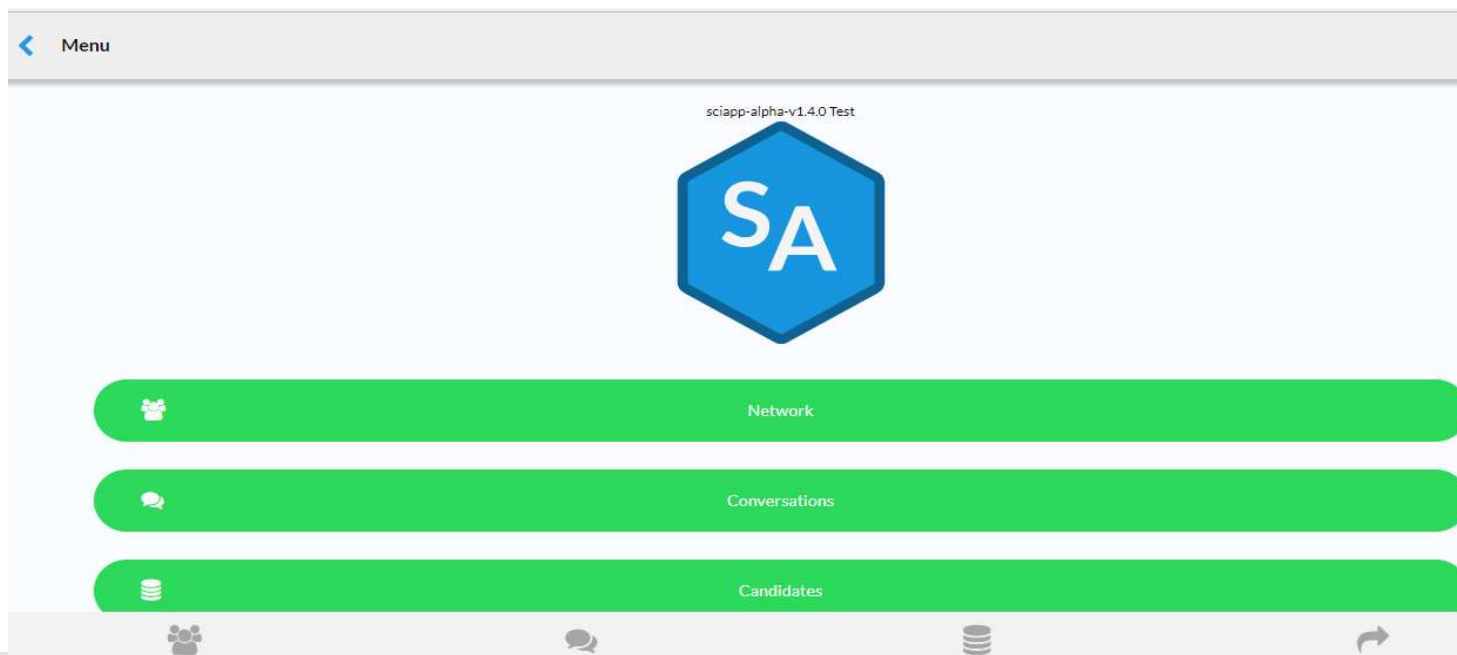
The screenshot displays the ESASky v3.0 interface. At the top left, the J2000 coordinates are shown as $05^h 35^m 51.569s +22^{\circ} 01' 43.64''$. The main view is a star field with a central galaxy, overlaid with several red-outlined observation footprints. A white 'v' icon is in the bottom left corner. A central panel titled 'VISIBILITY DATE' shows a calendar for February 2017, with a 'Check Visibility!' button. A list of observatories is on the left: XMM-Newton, INTEGRAL, Paranal-VLT, La Silla-3.6m, and JWST. At the bottom, there is an 'Open data panel' button, a row of national flags, and the ESA logo with 'ALADIN 7'.

Open data panel

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European Space Agency

Scientific collaborative tool: SciApp

- Web tool focused on information sharing between scientists
- Based on astronomical source conversations (candidate list DB)
- Interface with services provided by observing facilities
- Observation campaign functionality

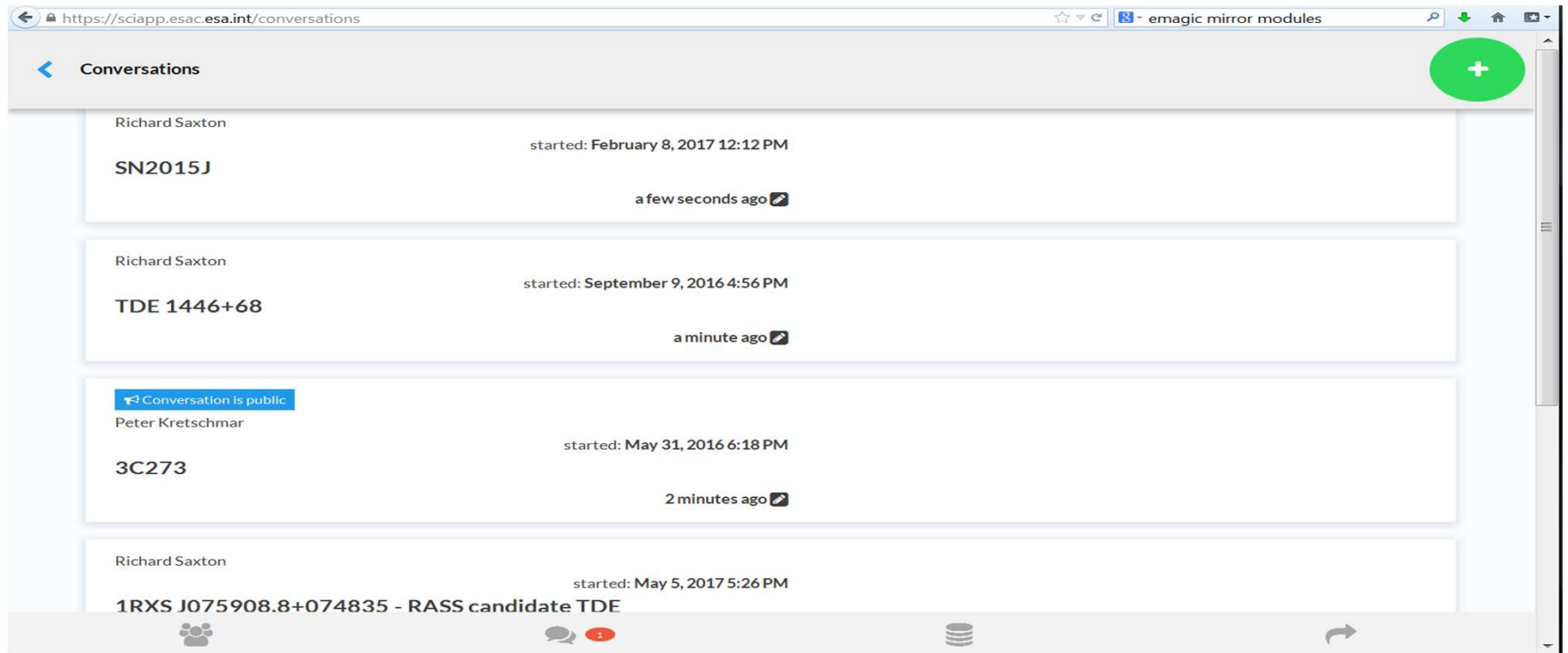


Slide 8



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SciApp: conversations



Set of public and private conversations



SciApp: a conversation



TDE 1446+68

Kate Alexander 9:21 PM

The second radio epoch from the VLA was observed on 2017 February 2017. No source was detected at the XRT position. The image rms was 5.9 microJy at 6 GHz and 27.9 microJy at 21.7 GHz, corresponding to 3-sigma upper limits on the radio flux of 18 microJy and 84 microJy respectively.

Kate Alexander 9:22 PM

*2017 February 22

Richard Saxton 9:53 AM

Richard Saxton 9:53 AM

Radio limits plot from Kate's email.

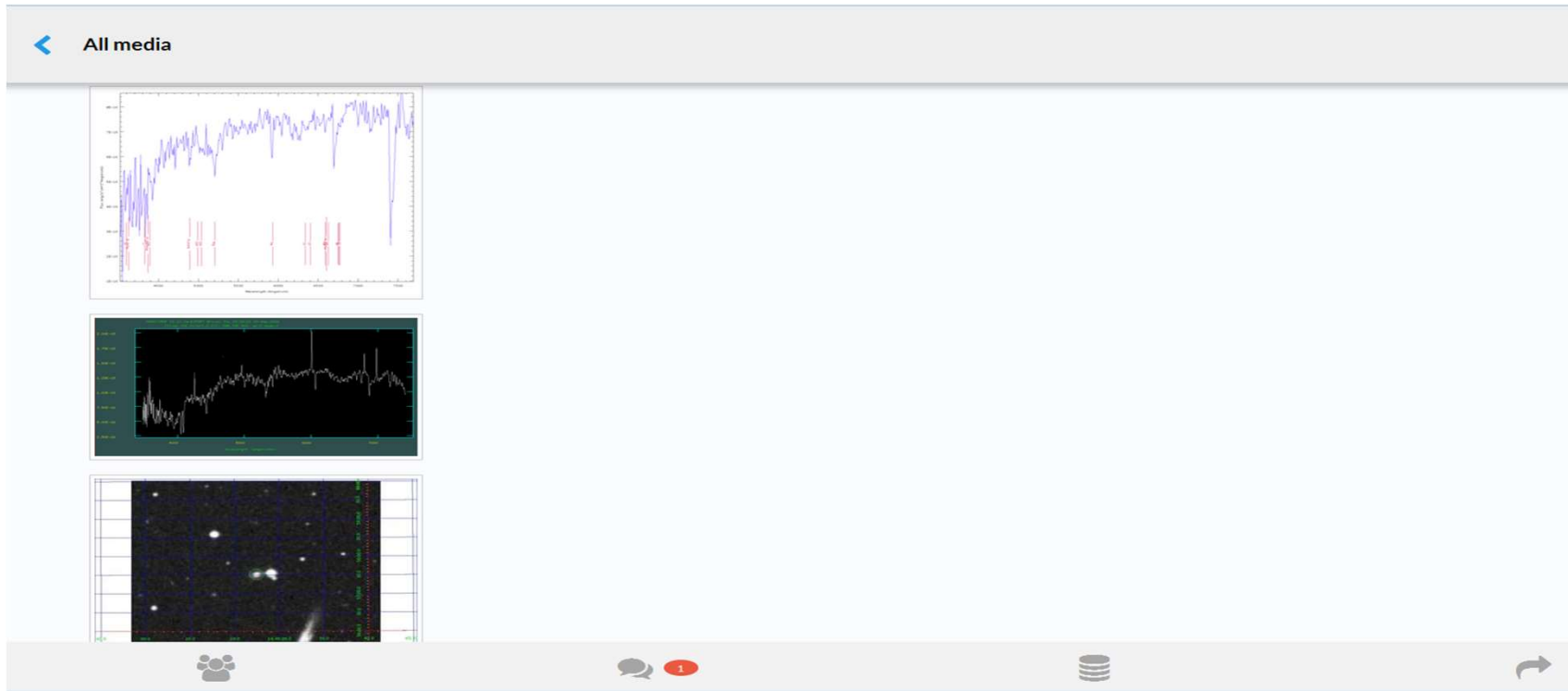
Richard Saxton 4:07 PM

New XMM TOO submitted for AO17 for 25ks

How was the weather at VLT last night?



SciApp: file repository



File / image repository per conversation thread

Slide 11



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SciApp: a conversation



[← TDE 1446+68](#) ☰ 📄 🗨️

Kate Alexander 9:21 PM
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Radio limits plot from Kate's email.

Richard Saxton 4:07 PM
New XMM TOO submitted for AO17 for 25ks

[🗨️](#)
How was the weather at VLT last night?



SciApp: target information



Check object visibility | Check object observations

GENERAL

Candidate is visible to all

Candidate name
ASASSN-14LI

Mission
ASSASN

RA : 192.063458 DEC : 17.77394

Revolution	Start	End
3293	2017-12-01 10:19	2017-12-03 01:12
3294	2017-12-03 10:11	2017-12-05 00:54
3295	2017-12-05 10:05	2017-12-07 00:47
3296	2017-12-07 09:59	2017-12-09 00:39
3297	2017-12-09 09:53	2017-12-11 00:31
3298	2017-12-11 09:46	2017-12-13 00:12

ASASSN-14lii	0770980701	OM	2016-12-04 14:24:48	2016-12-
ASASSN-14lii	0770980701	MOS2	2016-12-04 14:25:09	2016-12-
ASASSN-14lii	0770980701	OM	2016-12-04 14:29:37	2016-12-
ASASSN-14lii	0770980701	PN	2016-12-04 14:30:16	2016-12-
ASASSN-14lii	0770980701	OM	2016-12-04 14:51:24	2016-12-
ASASSN-14lii	0770980701	OM	2016-12-04 15:21:31	2016-12-
ASASSN-14lii	0770980701	OM	2016-12-04 15:49:58	2016-12-
ASASSN-14lii	0770980801	RGS1	2017-06-08 01:00:52	2017-06-
ASASSN-14lii	0770980801	RGS2	2017-06-08 01:00:57	2017-06-
ASASSN-14lii	0770980801	MOS2	2017-06-08 01:01:22	2017-06-
ASASSN-14lii	0770980801	OM	2017-06-08 01:01:45	2017-06-
ASASSN-14lii	0770980801	MOS2	2017-06-08 01:02:06	2017-06-
ASASSN-14lii	0770980801	OM	2017-06-08 01:06:34	2017-06-
ASASSN-14lii	0770980801	PN	2017-06-08 01:07:13	2017-06-
ASASSN-14lii	0770980801	OM	2017-06-08 01:41:16	2017-06-
ASASSN-14lii	0770980801	OM	2017-06-08 02:23:28	2017-06-
ASASSN-14lii	0770980801	OM	2017-06-08 03:13:10	2017-06-

Add new campaigns

CAMPAIGNS IN CONVERSATION

CAMPAIGNS LIST

VLT

Energy band
Status

Optical
PROGRESS

CTA

Energy band
Status

GeV/TeV
PROGRESS

XMM-Newton

Energy band
Status

keV
PROGRESS

INTEGRAL

Energy band
Status

keV/MeV
PROGRESS

INTEGRAL RESULTS:



Summary



Standardize visibility checkers and plan/scheduled observation information as services

Prepare this standardization in collaboration with other groups under the VO umbrella

Integrate these services into applications, such as: ESASky, SciApp,...

