

CEASAR Hands' On Workshop for Data Providers

CHOW4DP – 22-23 February 2023 – Tor Vergata

Accordo ASI - INAF n. 2020-35-HH.0



TAP / ObsTAP

an example of metadata curation

CAESAR NODE2000

Project Prime:



Project Partners:



Università di Genova



Università di Catania



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Outline

- TAP
 - TAP_SCHEMA
- ObsTAP
 - obscure table



The IVOA TAP Recommendation

IVOA – International Virtual Observatory Alliance

<https://www.ivoa.net>

TAP – Table Access Protocol

<https://www.ivoa.net/documents/TAP/20190927/index.html>

Recommendation == IVOA approved standard

Schema	Name
TAP_SCHEMA	schemas
TAP_SCHEMA	columns
TAP_SCHEMA	tables
TAP_SCHEMA	keys
TAP_SCHEMA	key columns

The table access protocol (TAP) defines a service protocol for **accessing general table data**, including astronomical catalogs as well as general database tables. Access is provided for both **database and table metadata as well as for actual table data**. [...]

How?

A dedicated schema in the database for domain context metadata: TAP_SCHEMA
(works like a specific INFORMATION_SCHEMA)





TAP_SCHEMA – column metadata

column name	type	not-null
table_name	string	true
column_name	string	true
datatype	string	true
arraysize	string	false
xtype	string	false
"size"	integer	false
description	string	false
utype	string	false
unit	string	false
ucd	string	false
indexed	integer	true
principal	integer	true
std	integer	true
column_index	integer	false

Description of the column content, roughly:

- Human
 - {description}
- Technical
 - {datatype, arraysize, xtype}
- Semantic
 - {unit, UCD, utype}
- Operational
 - {indexed, principal, std, column_index}

EXAMPLE

column_name	"obs_start"
datatype	"char"
arraysize	"*"
xtype	"timestamp"
description	"timestamp of the start of the observation"
unit	"d"
ucd	"time.start;obs"





ObsTAP, or...

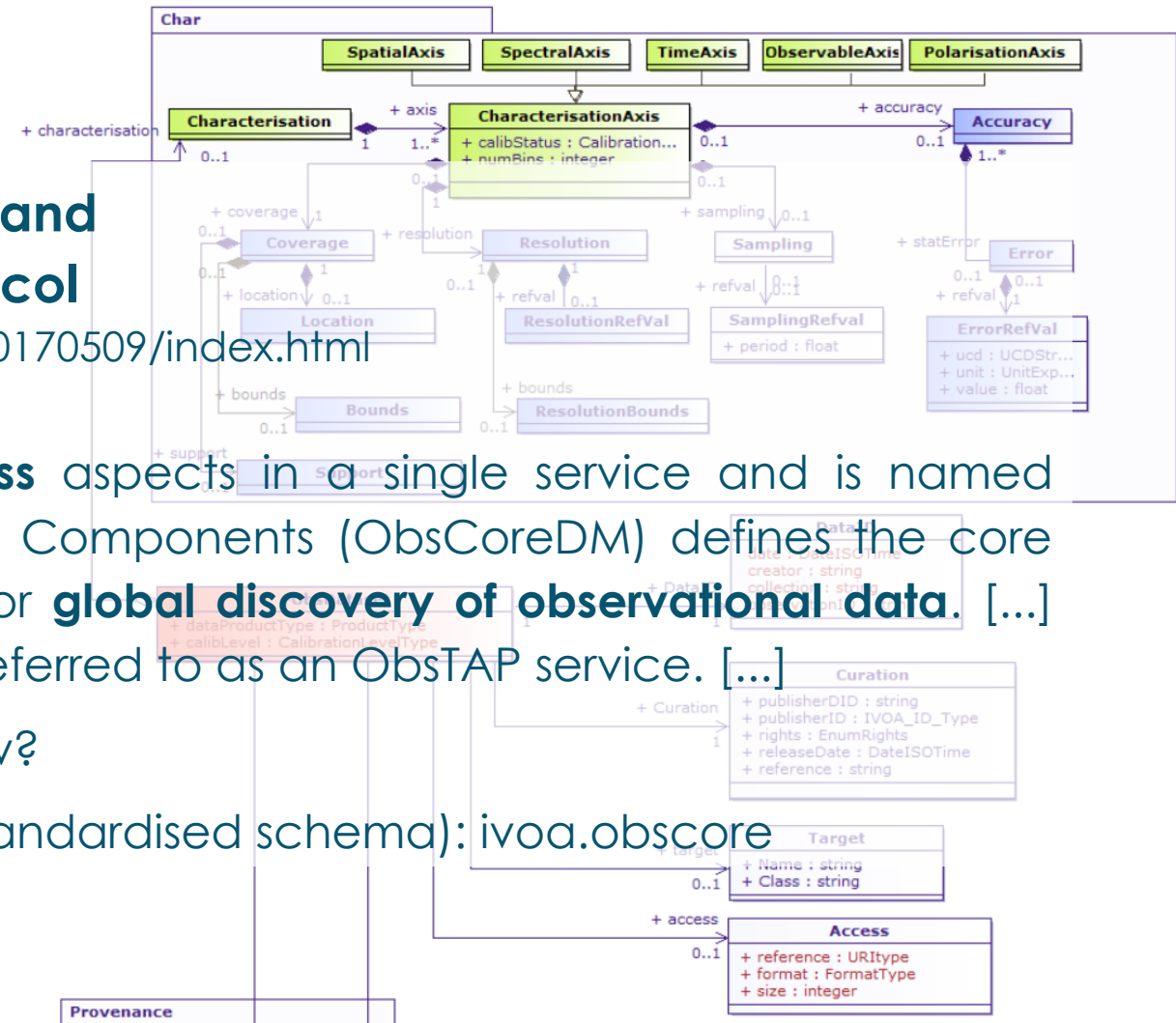
Observation Data Model Core Components and its Implementation in the Table Access Protocol

<https://www.ivoa.net/documents/ObsCore/20170509/index.html>

[...] integrates **data modeling** and **data access** aspects in a single service and is named ObsTAP. [...] the Observation Data Model Core Components (ObsCoreDM) defines the core components of **queryable metadata** required for **global discovery of observational data**. [...] The combination of the ObsCoreDM with TAP is referred to as an ObsTAP service. [...]

How?

A specific table structure (within a standardised schema): [ivoa.obscore](https://www.ivoa.net/documents/ObsCore/20170509/index.html)





Ivoa.obscore – model metadata

Column Name	Unit	Type	Description
dataprodct_type	unitless	String	Logical data product type (image etc.)
calib_level	unitless	enum integer	Calibration level {0, 1, 2, 3, 4}
obs_collection	unitless	String	Name of the data collection
obs_id	unitless	String	Observation ID
obs_publisher_did	unitless	String	Dataset identifier given by the publisher
access_url	unitless	String	URL used to access (download) dataset
access_format	unitless	String	File content format (see in App. BB.5.2)
access_estsize	kbyte	integer	Estimated size of dataset in kilo bytes
target_name	unitless	String	Astronomical object observed, if any
s_ra	deg	double	Central right ascension, ICRS
s_dec	deg	double	Central declination, ICRS
s_fov	deg	double	Diameter (bounds) of the covered region
s_region	unitless	String	Sky region covered by the data product (expressed in ICRS frame)
s_xel1	unitless	integer	Number of elements along the first spatial axis
s_xel2	unitless	integer	Number of elements along the second spatial axis
s_resolution	arcsec	double	Spatial resolution of data as FWHM
t_min	d	double	Start time in MJD
t_max	d	double	Stop time in MJD
t_exptime	s	double	Total exposure time
t_resolution	s	double	Temporal resolution FWHM
t_xel	unitless	integer	Number of elements along the time axis
em_min	m	double	Start in spectral coordinates
em_max	m	double	Stop in spectral coordinates
em_res_power	unitless	double	Spectral resolving power
em_xel	unitless	integer	Number of elements along the spectral axis
o_ucd	unitless	String	UCD of observable (e.g. phot.flux.density, phot.count, etc.)
pol_states	unitless	String	List of polarization states or NULL if not applicable
pol_xel	unitless	integer	Number of polarization samples
facility_name	unitless	String	Name of the facility used for this observation
instrument_name	unitless	String	Name of the instrument used for this observation

example
Observational Core Data Model

← identifier
dataset access

spatial

temporal

spectral

← Unified
Content
Descriptor
Controlled
Vocabulary



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Thank you!

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