

# Obscure data model update and DataSet DM compatibility

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# Missing fields for serving pixelated N-dim arrays data

Expressed as a requirement for SIAv2 at madrid Interop.

1. Number of subarrays (usually but not always 1)  
"num\_array" integer
2. Number of array axes (dimensionality) of the main array  
"num\_axes" integer
3. Length of each axis  
"axis\_length" integer array, e.g., "512 512 3" is the simplest representation
4. Number of WCS axes (may differ from num\_axes)  
"num\_wcs\_axes" integer
5. Coordinate type on each WCS axis  
"axis\_wcs\_type" whitespace delimited list of axis types  
e.g RA-TAN DEC-TAN WAVELENGTH

A new class name **DimensionsAndMappingSummary**

# DimensionAndMappingSummary Class

Column name	Utype	Units	Datatype	Definition	Mandatory Status	STC2 Conterpart
<a href="#">num_array</a>	ObsDataset.DimensionAndMappingSummary.numArray	unitless	integer	Number of Subarrays in the Dataset	NO	N/A
<a href="#">num_axes</a>	ObsDataset.DimensionAndMappingSummary.numAxes	unitless	integer	Number of array axes (dimensionality) of the main array	NO	PixelSpace.naxes
<a href="#">axis_length</a>	ObsDataset.DimensionAndMappingSummary.axesLength	unitless	integer	Length of each axis	NO	PixelSpace.pixelAxes.length on each axis
<a href="#">num_wcs_axes</a>	ObsDataset.DimensionAndMappingSummary.numWCSAxes	unitless	integer	Number of wcs axes (may differ from num_axes)	YES	N/A
<a href="#">axis_wcs_type</a>	ObsDataset.DimensionAndMappingSummary.axisType	unitless	string	Coordinate type on each WCS axis following WCS definition (list)	YES	N/A

# Data discovery using redshift axis

- Use cases as in Obscore document:

- A.3.2. Use case 3.2

- Show me a list of all data that satisfies:

- I. DataType=cube with 3 dimensions

- II. Axes includes Velocity

- III. Axes includes RA

- IV. Axes includes DEC

- V. Velocity Resolution better than 50 km/s

- VI. RA includes 16.000

- VII. Dec includes +41.000

- Suggestions circulated January 2013.

- Redshift frame reposition

- Redshift frame doppler definition

- + regular parameters as on other axes

# Redshift ObsCore DM fields

DOPPLER CHARACTERISATION (RedShift)					
d_ucd	Char.DopplerAxis.ucd	unitless	string	Nature of the Doppler axis	NO
d_unit	Char.DopplerAxis.unit	unitless	string	Units along the Doppler axis	NO
d_calib_status	Char.DopplerAxis.calibrationStatus	unitless	enum	Type of Doppler coord calibration	NO
d_reference_position	Char.DopplerAxis.ReferencePosition	unitless	enum	Phase space origin for Doppler velocity, also named Reference Position in STC REC, Section 4.4.1.1.1	YES
d_definition	Char.DopplerAxis.definition	unitless	enum	Doppler velocity definition: RADIO, OPTICAL, RELATIVISTIC, as in STC REC, Section 4.4.1.4.2	YES
d_min	Char.DopplerAxis.Coverage.Bounds.Limits.LoLimit	km/s (def)	double	Start in Doppler coordinates	YES
d_max	Char.DopplerAxis.Coverage.Bounds.Limits.HiLimit	km/s	double	Stop in Doppler coordinates	YES
d_res_power	Char.DopplerAxis.Resolution.ResolPower.refval	unitless	double	Value of the resolving power along the Doppler axis. (Reference)	YES
d_res_power_min	Char.DopplerAxis.Resolution.ResolPower.LoLimit	unitless	double	Resolving power min value on Doppler axis	NO
d_res_power_max	Char.DopplerAxis.Resolution.ResolPower.HiLimit	unitless	double	Resolving power max value on Doppler axis	NO
d_resolution	Char.DopplerAxis.Resolution.refval.value	km/s	double	Value of Resolution along the Doppler axis	NO
d_stat_error	Char.DopplerAxis.Accuracy.StatError.refval.value	km/s	double	Doppler Coord statistical error	NO

# Articulation of current data models

- ObsCore DM → Discovery oriented
- Dataset DM → Abstract view on generic datasets

Two views on a common set of metadata

- Take the benefit of each
- Recognise the historical progression :
  - Obscore has been an efficient test bed for assessing the benefits of a common description accross archives to foster interoperability.
- How to homogeneise ?

Obscore:Observation → Obscore:Dataset like in DatasetDM

# Extension of data models

- Re-using is useful
  - E. g Experiment ( SimDM) derived to represent the action/process of observation
  - Curation
    - In Resource metadata , Spectrum1.1, 2.0 , Obscore,
    - Dataset DM
- Allowing any kind of data model re-use within the VO layers ( data access) is dangerous
  - Major side effects : interoperability is lost

# Context of data model extension ??

- If I need a new model , the reason is:
- New types of data/metadata are delivered in the community
- VO standards are too difficult to read , boring , and too abstract
- VO Implementation support is lacking :  
More documented examples required