

IVOA Characterisation data model Utypes list

Version 1.1

IVOA Working Draft

This version:

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Abstract

We present here the list of utypes for the Characterisation data model.

Status of this document

A complement to Characterisation DM IVOA draft . In discussion in the Char DM subgroup.

Some interpretation rules

All Utypes below are prefixed by the "cha:" namespace in order to mention the Data model it has been built from. The first level elements of the Utypes tree are then : **CharacterisationAxis**, shorten as **ChAxis** in the tables below. The mandatory status of each element is expressed at two different levels: the status of main elements is expressed in uppercase while the one of sub elements is expressed in lower case, with respect to its parent element. For instance ChAxis.resolution **SHOULD** be given, and therefore has a RECOMMENDED status; if this element is present, then the sub-element ChAxis.resolution.ResolutionRefval **must** be given and gets a "mandatory" status.

This does not totally reflects the recursivity of this property, so we could state that (mandatory recommended optional) in lower case always represent relative mandatory status with respect to the parent element. If not specified, the default mandatory status is "optional". "Mandatory", "Recommended" and "Optionnal", will be coded as "M", "R","O" respectively in the following Utypes tables.

Utype	Meaning	Type	Status
<i>ChAxis</i> <i>SpatialAxis</i>	General description of the axis General description of the spatial axis. Can replace the head <i>ChAxis</i> string in any of utypes below		M o
<i>TimeAxis</i>	General description of the time axis. Can replace the head <i>ChAxis</i> string in any of utypes below		o
<i>SpectralAxis</i>	General description of the spectral axis. Can replace the head <i>ChAxis</i> string in any of utypes below		o
<i>ChAxis.AxisName</i>	Axis name (representing the physical nature of the axis like Spatial Spectral, Time, Velocity, or any other free name) Defines if and how the axis is calibrated	free string	M
<i>ChAxis.calibrationStatus</i>		one string in (CALIBRATED, UNCALIBRATED,RELATIVE, NORMALIZED)	r
<i>ChAxis.ucd</i>	Axis ucd: physical meaning	standard UCD vocabulary	m
<i>ChAxis.unit</i>	Default unit for the axis	controlled unit vocabulary following the VOTABLE unit definitions	m
<i>ChAxis.coordsystem</i>	Reference coordinate system for the axis	stc AstrocoordSys or xlink	m
<i>ChAxis.ObsyLoc</i>	Observatory location	stc observatoryLocationType or xlink	o
<i>ChAxis.accuracy</i>	Global accuracy description of the axis		r
<i>ChAxis.accuracy.quality</i>	A combination of flags attesting the data quality	string:free or from restricted list vocabulary	o
<i>ChAxis.accuracy.statError</i>	Statistical error of the axis	Here fixed to "statistical"	r
<i>ChAxis.accuracy.statError.flavor</i>	Type of the Error described (statistical, systematic, global ...)		
<i>ChAxis.accuracy.statError.ErrorRefVal</i>	Typical statistical Error on the axis	can be 1D Error: stc:double1Type	m if no ErrorBounds
<i>ChAxis.accuracy.statError.ErrorRefVal.ErrorRefValue</i>	Typical statistical error value on the axis generic utype for Error, Error2, Error3, Error2Matrix Error3Matrix Error2Radius Error3Radius	2D Errors: stc:size2Type or double2Type or double1Type (error2 radius)	m
<i>ChAxis.accuracy.statError.ErrorRefVal.documentation</i>	A description of the Error value.	3D Errors: stc:size3Type or double3Type or double1Type (error3 radius)	
<i>ChAxis.accuracy.statError.ErrorBounds</i>	Error value range along the axis	Any URI type	o
<i>ChAxis.accuracy.statError.ErrorBounds.ErrorLimits</i>	Hi and Low values of statistical errors on this axis.	stc:coordScalarInterval	m if no ErrorRefVal
<i>ChAxis.accuracy.statError.ErrorBounds.documentation</i>	A description of the Error value range.		
<i>ChAxis.accuracy.statError.ErrorVariability</i>	A detailed description of the local error values error values. Could be conveyed with the data as in IVOA Spectrum data model	Any URI type any URI type pointing to such map	o o

Utype	Meaning	Type	Status
ChAxis.accuracy.sysError	systematic error along the axis		o
ChAxis.accuracy.sysError.flavor	the type of the error (here systematic)		
ChAxis.accuracy.Error	Same subtree as the statError above subtree a generic error subtree with the flavor field as above		o
ChAxis.independentaxis	Tells us if the axis is dependent or not from the others. For observable this is false.	Type : boolean	r
ChAxis.numBins	number of bins for this axis.	array of 1 2 or 3 integers	r
ChAxis.undersamplingStatus	a flag to tell if the data are undersampled.	boolean	o
ChAxis.regularsamplingStatus	a flag to tell if the data are regularly sampled.	boolean	o

Utype	Meaning	Type	Status
<i>ChAxis.coverage</i>	How the observation is spanned along the axis		m
<i>ChAxis.coverage.unit</i>	Redefinition of unit for coverage		o
<i>ChAxis.coverage.coordsystem</i>	Redefinition of coordsystem		o
<i>ChAxis.coverage.location</i>	Typical coordinate value on this axis		m if no bounds
<i>ChAxis.coverage.location.unit</i>	Redefinition of local unit		o
<i>ChAxis.coverage.location.coordsystem</i>	Redefinition of coordsystem		o
<i>ChAxis.coverage.location.coord</i>	The typical coordinate value.		m
<i>ChAxis.coverage.location.documentation</i>	Any kind of documentation on location meta-data	stc:astroCoordsType any URI type	o
<i>ChAxis.coverage.bounds</i>	Limits of the observation on this axis		m
<i>ChAxis.coverage.bounds.unit</i>	Unit redefinition for bounds		o
<i>ChAxis.coverage.bounds.coordsystem</i>	for bounds coord system redefinition		o
<i>ChAxis.coverage.bounds.limits</i>	The actual values defining the bounds		m
<i>ChAxis.coverage.bounds.documentation</i>	A document to mention how the bounds are defined	Implemented as containing either a cha:CharBox which is a customized Coordinate with mandatory values AND Size of dimension 1, 2 or 3. or as an stc Interval (Scalar, 2DVec or 3DVec) any URI type	o
<i>ChAxis.coverage.support</i>	Describes the area where measurements are effectively present and interpretable		r
<i>ChAxis.coverage.support.unit</i>	Local redefinition if needed		o
<i>ChAxis.coverage.support.coordsystem</i>	Local redefinition if needed		o
<i>ChAxis.coverage.support.Area Type</i>	Gives the name of the region shape	predefined list of string (circle,polygon,box)	m
<i>ChAxis.coverage.support.Area</i>	Defines the effective covered region for this axis	stc:AstroCoordArea	m
<i>ChAxis.coverage.support.documentation</i>	Some text about the Support metadata	any URI type	o
<i>ChAxis.coverage.sensitivity</i>	Encodes the variability of the response along the axis		o
<i>ChAxis.coverage.sensitivity.unit</i>	Local redefinition if needed		o
<i>ChAxis.coverage.sensitivity.coordsystem</i>	Local redefinition if needed		o
<i>ChAxis.coverage.sensitivity.sensitivityMap</i>	A map describes the variability of the response along the axis. Can be attached to the data	implemented as any URI type	m
<i>ChAxis.coverage.sensitivity.documentation</i>	Documents the purpose, type and encoding of sensitivity information	any URI type	m

Utype	Meaning	Type	Status
<i>ChAxis.resolution</i>	Minimum size of an interpretable signal along the axis		R
<i>ChAxis.resolution.unit</i>	Unit redefinition for whole resolution		o
<i>ChAxis.resolution.coordsystem</i>	Coord system redefinition for whole resolution		o
<i>ChAxis.resolution.resolutionRefVal</i>	Resolution Reference value		m if no bounds
<i>ChAxis.resolution.resolutionRefVal.unit</i>	Redefinition for Resolution Reference value		o
<i>ChAxis.resolution.resolutionRefVal.coordsystem</i>	Redefinition for Resolution Reference value		o
<i>ChAxis.resolution.resolutionRefVal.ReferenceValue</i>	Typical resolution value along the axis	1D resolution stc:double1Type	m
	generic utype for Resolution: Resolution2, Resolution3, Resolution2Matrix, Resolution3Matrix,	2D resolution: stc:size2Type or double4Type	
	Resolution2Radius, Resolution3Radius	3D resolution: stc:size3Type or double9Type	
<i>ChAxis.resolution.resolutionRefVal.documentation</i>	Defines and explains how this reference value for resolution has been estimated	or double1Type (resolution radius) or double1Type (resolution 2 radius) or double1Type (resolution 3 radius) any URIType	o
<i>ChAxis.resolution.resolutionBounds</i>	Redefinition for resolution Bounds		r
<i>ChAxis.resolution.resolutionBounds.unit</i>	Redefinition for resolution Bounds		o
<i>ChAxis.resolution.resolutionBounds.coordsystem</i>	High and low values of resolution on this axis	stc:coordScalarInterval,	
<i>ChAxis.resolution.resolutionBounds.resolutionLimits</i>	utype for resolutionLimits		
<i>ChAxis.resolution.resolutionBounds.resolutionLimits3</i>	resolutionLimits2, resolutionLimits3	2D or 3DVec	o
<i>ChAxis.resolution.resolutionBounds.documentation</i>	Defines and explains how this resolution has been estimated		o
<i>ChAxis.resolution.resolutionSupport</i>	Just for local redefinition		o
<i>ChAxis.resolution.resolutionSupport.unit</i>	Just for local redefinition		o
<i>ChAxis.resolution.resolutionSupport.coordsystem</i>	Set of High an Low values for resolution ranges on this axis: resolutionLimits2, resolutionLimits3	stc:coordScalarInterval	o
<i>ChAxis.resolution.resolutionSupport.resolutionLimits</i>	cf. resolutionBounds. Many possibilities	2DVec or 3DVec	m
<i>ChAxis.resolution.resolutionSupport.documentation</i>	Any kind of documentation on the current piece of metadata.	any URIType	
<i>ChAxis.resolution.resolutionVariability</i>	Just for local redefinition		o
<i>ChAxis.resolution.resolutionVariability.unit</i>	Just for local redefinition		o
<i>ChAxis.resolution.resolutionVariability.coordsystem</i>	This map describes the variability of resolution along the axis, the varying shape of the point spread function, or both. Can be attached to the data	anyURIType	o
<i>ChAxis.resolution.resolutionVariability.resolutionMap</i>	Defines and explains how this resolution variability has been estimated		m
<i>ChAxis.resolution.resolutionVariability.documentation</i>	Defines and explains how this resolution variability has been estimated	any URIType	m

Utype	Meaning	Type	Status
<i>ChAxis.samplingPrecision</i>	How data have been sampled along this axis		O
<i>ChAxis.samplingPrecision.unit</i>	Redefinition for samplingPrecision		o
<i>ChAxis.samplingPrecision.coordsystem</i>	Redefinition for samplingPrecision		o
<i>ChAxis.samplingPrecision.RefVal</i>	Typical values for sampling period and sample extent		m
<i>ChAxis.samplingPrecision.RefVal.unit</i>	Redefinition for samplingPrecision Reference Value		o
<i>ChAxis.samplingPrecision.RefVal.coordsystem</i>	Redefinition for samplingPrecision Reference Value		o
<i>ChAxis.samplingPrecision.RefVal.samplingPeriod</i>	Typical sampling Period value of the axis Generic utype for the sampling period PixSize, PixSize2, PixSize3 PixSize2Matrix, PixSize3Matrix, PixSize2Radius, PixSize3Radius	1D value stc:double1Type 2D stc:size2Type or double4Type or double1Type (radius) 3D stc:size3Type or double9Type or double1Type (radius)	m
<i>ChAxis.samplingPrecision.RefVal.sampleExtent</i>	Typical sample Extent value of the axis Generic utype for the sample size	1D: stc:double1Type 2D: stc:size2Type or double4Type or double1Type (resolution radius) 3D: stc:size3Type or double9Type or double1Type (3 radius)	r o
<i>ChAxis.samplingPrecision.RefVal.fillFactor</i>	Fill factor can be defined as the ratio of sample Extent/samplingPeriod. Useful to know the proportion of flux actually measured		
<i>ChAxis.samplingPrecision.RefVal.documentation</i>	Explains how the sampling Precision typical values are estimated	implemented as a double any URI type	o

Utype	Meaning	Type	Status
ChAxis.samplingPrecision.samplingPrecisionBounds	Redefinition for samplingPrecision bounds		O
ChAxis.samplingPrecision.samplingPrecisionBounds.unit	Redefinition for samplingPrecision bounds High and Low values of		o
ChAxis.samplingPrecision.samplingPrecisionBounds.coordsystem	Sampling Period along this axis	stc:coordScalarInterval	o
ChAxis.samplingPrecision.samplingPrecisionLimits	generic utype for samplingPeriodLimits1 samplingPeriodLimits2, samplingPeriodLimits3	2D Vec or 3D Vec	m
ChAxis.samplingPrecision.samplingPrecisionBounds.samplingExtentLimits	High and Low values of sampleExtent along this axis	stc:coordScalarInterval	
ChAxis.samplingPrecision.samplingPrecisionBounds.documentation	generic utype for sampleExtentLimits1 sampleExtentLimits2, sampleExtentLimits3	2D Vec or 3D Vec	
ChAxis.samplingPrecision.samplingPrecisionSupport	A place to hook some explanations about "how" the samplingBounds were assessed	any URI type	o
ChAxis.samplingPrecision.samplingPrecisionSupport.unit	Redefinition for samplingPrecision Support		o
ChAxis.samplingPrecision.samplingPrecisionSupport.coordsystem	Redefinition for samplingPrecision Support Set of High and Low values of		o
ChAxis.samplingPrecision.samplingPrecisionSupport.samplingPeriodLimits	Sampling Period along this axis		o
ChAxis.samplingPrecision.samplingPrecisionSupport.sampleExtentLimits	generic utype for samplingPeriodLimits1 samplingPeriodLimits2, samplingPeriodLimits3	stc:coordScalarInterval	
ChAxis.samplingPrecision.samplingPrecisionSupport.sampleExtentLimits	set of Hi and Low values of	2D Vec or 3D Vec	o
ChAxis.samplingPrecision.samplingPrecisionSupport.documentation	Sample Extent along this axis	stc:coordScalarInterval	
ChAxis.samplingPrecision.samplingPrecisionVariability	generic utype for sampleExtentLimits1 sampleExtentLimits2, sampleExtentLimits3	2D Vec or 3D VEC	
ChAxis.samplingPrecision.samplingPrecisionVariability.unit	Explains "how" the Sampling Support was done and assessed	any URIType	r
ChAxis.samplingPrecision.samplingPrecisionVariability.coordsystem	Redefinition for sampling variability		O
ChAxis.samplingPrecision.samplingPrecisionVariability.samplingPrecisionMap	Redefinition for sampling variability This map describes the variability of the sampling along the axis, or the varying shape of the sampling function, or both. Can be seen as explanatory data	anyURI type	o
ChAxis.samplingPrecision.samplingPrecisionVariability.documentation	Explains how the samplingPrecision variation map has been assessed	any URI type	r

Updates of this document

- Changed mandatory relative status of ErrorRefVal and ErrorBounds relative to ChAxis.accuracy.statError and sysError
- update pixel size comments in samplingPrecision.samplingPeriod and samplingExtent