Characterisation implementations

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Implementations

- Data discovery (DAL, ASPID, Aladin, CAMEA)
- Data Management (ASPID)
- Data Processing (just a start : VOEvent/Aladin)
- CAMEA is a tool for designing implementations

Char in DAL protocols: SSA 1.0

- SSA Query reponse has a char package based on Spectrum char class
  - eg: Char.*Axis.Coverage.Location.*
  Char.*Axis.Coverage.Bounds.*
  Char.*Axis.Coverage.Support.*
  Char.*Axis.Accuracy.StaError.*
  Char.*Axis.Accuracy.SysError.*
  Char.*Axis.Resolution.*
  --→ cha:*Axis.coverage.location.*, cha:*Axis.coverage.bounds.*, etc…
- Most of SSA Query parameters mappable on Chardm utypes.
  - Eg: BAND = spectralAxis.Coverage.Bounds
  SPATRES = spatialAxis.resolution.resolutionRefVal
  Mainly Char level 1 and 2 (except coverage.support.area)

Char in DAL protocols: SIA

- SIA 1.0 query reponse contains some fields giving some characterisation of the dataset but no proper modelling is available
- SIA2.0 will contain some Char utypes for 2D images, 3D cubes, etc … (2008)

Implementation in Aladin

- Each image is characterized by level 1, 2 and 3 in spatial covegage, level 1 in time , level 1 and 2 in spectral ….
- Characterization in two formats : XML and VOTAble
- Accessible via an `acref` in SIA Aladin service …..

Data found(67) No data (449) Errors(7) Waiting(0) 100% complete

Position:HD 800 Resources/hits: 523/17922 Cache age:0.099 hours

Datascope

Summary | **Resources** | Data Table | No Data | Still Processing | Errors | Help

Matching Resources

These resources had data in the specified region.
Click on the

Resources

checkbox to select the data for download or analysis.
name to view the catalog data and select files.
? to see the metadata for the resource.

When the number after the name is given as *nn/mm* you have selected *nn* of the *mm* files indexed in that resource. Click on the resource name to select files within such resources.

Major Multiwavelength Services

☐ ADS (6) ?	☐ NED(sources) (21) ?	☐ Simbad (11) ?	☐ SkyView (0/19) ?	

Images (Data in one or more FITS files)

Multi	☐ Aladin (0/55) ?	☐ CADC (0/8) ?			
Optical	☐ DSS1 (0/1) ?	☐ DSS1 (0/1) ?	☐ DSS2 (0/1) ?	☐ DSS2B (0/1) ?	☐ DSS2R (0/1) ?
Radio	☐ CO (0/1) ?	☐ GB6 (0/1) ?	☐ NVSS (0/1) ?	☐ NVSS (0/1) ?	☐ WENSS (0/1) ?
Infrared	☐ 2MASS (0/3) ?	☐ 2MASS ASKY AT (0/18) ?	☐ 2MASS QL (0/18) ?	☐ IRAS (0/4) ?	☐ ISSA (0/8) ?
	☐ SFD IR (0/2) ?				
X-ray	☐ RASS (0/3) ?	☐ ROSAT/PSPC (0/2) ?			

Lists of Observations (Data in one VOTable)

Multi	☐ HETE2 (2599) ?	
X-ray	☐ ROSAT (2) ?	
Gamma-ray	☐ COS-B (4) ?	☐ GRO/EGRET (10) ?

Catalogs of Objects (Data in one VOTable)

Data found(35) No data (224) Errors(4) Waiting(260) 50% complete

Position:HD 800 Resources/hits: 523/15712 Cache age:0.016 hours Stop updates

Summary | Resources | **Data Table** | No Data | Still Processing | Errors | Help

Data for The ALADIN image server

Quick Links: ASCII | MetaData | XML | VOPlot | Overlay

<<First <Prev| 1-25 |Next> Last>>

All	Observation_Name	CentralPoint_RA	CentralPoint_DEC	Naxes	Naxis	AngularPixelSize	OriginalCoding	DataType	Filter_Name
1. View	2MASS_J_981104N_JI0590115	00 13 59.4	44 25 07.0	2		0.000278 0.000278	text/xml	Characterisaton.vot	J
2. View	2MASS_J_981104N_JI0590115	00 13 59.4	44 25 07.0	2		0.000278 0.000278	text/xml	Characterisation.xml	J
3. View|FOV	2MASS_J_981104N_JI0590115	00 13 59.4	44 25 07.0	2		0.000278 0.000278	image/fits	Fits.image	J
4. View	2MASS_J_981104N_JI0590126	00 13 59.4	44 41 17.0	2		0.000278 0.000278	text/xml	Characterisaton.vot	J
5. View	2MASS_J_981104N_JI0590126	00 13 59.4	44 41 17.0	2		0.000278 0.000278	text/xml	Characterisation.xml	J
6. View|FOV	2MASS_J_981104N_JI0590126	00 13 59.4	44 41 17.0	2		0.000278 0.000278	image/fits	Fits.image	J
7. View	2MASS_J_981104N_JI0590138	00 13 59.4	44 57 27.0	2		0.000278 0.000278	text/xml	Characterisaton.vot	J
8. View	2MASS_J_981104N_JI0590138	00 13 59.4	44 57 27.0	2		0.000278 0.000278	text/xml	Characterisation.xml	J
9. View|FOV	2MASS_J_981104N_JI0590138	00 13 59.4	44 57 27.0	2		0.000278 0.000278	image/fits	Fits.image	J
10. View	2MASS_K_981104N_KI0490115	00 11 22.9	44 25 07.3	2		0.000278 0.000278	text/xml	Characterisaton.vot	K
11. View	2MASS_K_981104N_KI0490115	00 11 22.9	44 25 07.3	2		0.000278 0.000278	text/xml	Characterisation.xml	K
12. View|FOV	2MASS_K_981104N_KI0490115	00 11 22.9	44 25 07.3	2		0.000278 0.000278	image/fits	Fits.image	K
13. View	2MASS_K_981104N_KI0490126	00 11 22.9	44 41 17.3	2		0.000278 0.000278	text/xml	Characterisaton.vot	K
14. View	2MASS_K_981104N_KI0490126	00 11 22.9	44 41 17.3	2		0.000278 0.000278	text/xml	Characterisation.xml	K
15. View|FOV	2MASS_K_981104N_KI0490126	00 11 22.9	44 41 17.3	2		0.000278 0.000278	image/fits	Fits.image	K
16. View	2MASS_K_981104N_KI0490138	00 11 22.9	44 57 27.3	2		0.000278 0.000278	text/xml	Characterisaton.vot	K
17. View	2MASS_K_981104N_KI0490138	00 11 22.9	44 57 27.3	2		0.000278 0.000278	text/xml	Characterisation.xml	K
18. View|FOV	2MASS_K_981104N_KI0490138	00 11 22.9	44 57 27.3	2		0.000278 0.000278	image/fits	Fits.image	K

Data Table

http://heasarc.gsfc.nasa.gov/cgi-bin/vo/datascope/rf.pl?sn=Aladin&col=13&id=317&index=1&cache=/ - Microsoft Internet Explorer

Précédente Rechercher Favoris


```
<?xml version="1.0" encoding="UTF-8" ?>
- <VOTABLE version="1.1" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://www.ivoa.net/xml/VOTable/v1.1">
    <DESCRIPTION>Votable serialization of the characterization metadata for Aladinb Image server F. Bonnarel May/September 2006 based on Char WD (sep 2006) edited by
      JCM,FB,IC,ML,AM,AR</DESCRIPTION>
  - <RESOURCE utype="cha:characterization">
      <DESCRIPTION>This RESOURCE element is a container holding the full characterization of the IFU observation</DESCRIPTION>
    - <TABLE utype="cha:SpatialAxis">
        <DESCRIPTION>Spatial characterization</DESCRIPTION>
        <FIELD ID="Na" name="Name" datatype="char" arraysize="*" utype="cha:SpatialAxis.axisName" />
        <FIELD ID="Uc" name="Ucd" datatype="char" arraysize="*" utype="cha:SpatialAxis.ucd" />
      - <FIELD ID="Ca" name="Calibration status" datatype="char" arraysize="*" utype="cha:SpatialAxis.calibrationStatus">
        - <VALUES>
            <OPTION value="CALIBRATED" />
            <OPTION value="UNCALIBRATED" />
            <OPTION value="RELATIVE" />
            <OPTION value="NORMALIZED" />
          </VALUES>
        </FIELD>
        <FIELD ID="CooSys" name="Coordinate system" datatype="char" arraysize="*" utype="cha:SpatialAxis.coordsystem" />
        <FIELD ID="Ste" name="Accuracy statistical error" datatype="double" utype="stc:Error2Radius" ucd="pos.eq;stat.error" />
        <FIELD ID="Sye" name="Accuracy systematic error" datatype="double" utype="stc:Error2Radius" ucd="pos.eq;sys.error" />
        <FIELD ID="Ia" name="independant Axis flag" datatype="boolean" utype="cha:SpatialAxis.independantAxis" />
        <FIELD ID="Nb" name="number of Bins" datatype="int" utype="cha:SpatialAxis.numBins" />
        <FIELD ID="usSt" name="unsampled Status" datatype="double" utype="cha:SpatialAxis.undersamplingStatus" />
        <FIELD ID="rsSt" name="regular sampling Status" datatype="double" utype="cha:SpatialAxis.regularsamplingStatus" />
        <FIELD ID="RA" name="Right ascension" datatype="double" utype="stc:AstroCoords.Position2D.Value2.C1" ucd="pos.eq" unit="deg" />
        <FIELD ID="dec" name="Declination" datatype="double" utype="stc:AstroCoords.Position2D.Value2.C2" ucd="pos.eq" unit="deg" />
        <FIELD ID="LoLi" name="Spatial bounds low limit" datatype="double" arraysize="2" utype="stc:CoordScalarInterval.LoLimit2Vec" ucd="pos.eq" unit="deg" />
        <FIELD ID="HiLi" name="Spatial bounds high limit" datatype="double" arraysize="2" utype="stc:CoordScalarInterval.HiLimit2Vec" ucd="pos.eq" unit="deg" />
        <FIELD ID="fovs" datatype="char" arraysize="*" utype="cha:SpatialAxis.coverage.support" />
        <FIELD ID="Res" name="Spatial Resolution" datatype="double" utype="stc:Resolution2Radius" unit="deg" />
        <FIELD ID="Sam" name="Sampling Precision" datatype="double" utype="stc:PixSize2" unit="deg" />
      - <GROUP utype="cha:SpatialAxis">
          <FIELDref ref="Na" />
          <FIELDref ref="Uc" />
          <FIELDref ref="Ca" />
          <FIELDref ref="CooSys" />
        - <GROUP utype="cha:spatialAxis.accuracy.statError.errorRefval.ErrorRefValue">
            <FIELDref ref="Ste" />
          </GROUP>
        - <GROUP utype="cha:spatialAxis.accuracy.sysError.errorRefval.errorRefValue">
            <FIELDref ref="Sye" />
          </GROUP>
          <FIELDref ref="Ia" />
          <FIELDref ref="Nb" />
          <FIELDref ref="usSt" />
          <FIELDref ref="rsSt" />
        - <GROUP utype="cha:spatialAxis.coverage">
          - <GROUP utype="cha:spatialAxis.coverage.location.coord">
              <FIELDref ref="Ra" />
              <FIELDref ref="dec" />
            </GROUP>
          - <GROUP utype="cha:spatialAxis.coverage.bounds.limits">
              <FIELDref ref="LoLi" />
```


Terminé Internet

ttp://heasarc.gsfc.nasa.gov/cgi-bin/vo/datascope/rf.pl?sn=Aladin&col=13&id=317&index=2&cache=/ - Microsoft Internet Explorer


```
<?xml version="1.0" encoding="UTF-8" ?>
<characterization xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:stc="http://www.ivoa.net/xml/STC/stc-v1.30.xsd"
 xmlns="http://www.ivoa.net/xml/Characterisation/Characterisation-v1.0.xsd" xmlns:xlink="http://www.w3.org/1999/xlink"
 xsi:schemaLocation="http://www.ivoa.net/xml/Characterisation/Characterisation-v1.0.xsd http://alinda.u-strasbg.fr/Model/Characterisation/schema/characterisation.1.0.xsd">
- <characterizationAxis>
   <axisName>spatial</axisName>
   <calibrationStatus>CALIBRATED</calibrationStatus>
   <ucd>pos</ucd>
   <unit>deg</unit>
   <coordsystem id="TT-ICRS-WAVELENGTH-TOPO" xlink:type="simple" xlink:href="ivo://STClib/CoordSys#TT-ICRS-TOPO" />
   <independantAxis>true</independantAxis>
 - <numBins2>
     <I1>512</I1>
     <I2>512</I2>
   </numBins2>
   <undersamplingStatus>false</undersamplingStatus>
   <regularsamplingStatus>true</regularsamplingStatus>
 - <coverage>
   - <location>
     - <coord coord_system_id="TT-ICRS-WAVELENGTH-TOPO">
       - <stc:Position2D>
           <stc:Name1>RA</stc:Name1>
           <stc:Name2>Dec</stc:Name2>
         - <stc:Value2>
             <stc:C1>3.497707</stc:C1>
             <stc:C2>44.418612</stc:C2>
           </stc:Value2>
         </stc:Position2D>
       </coord>
     </location>
   - <bounds>
     - <limits coord_system_id="TT-ICRS-WAVELENGTH-TOPO">
       - <stc:LoLimit2Vec>
           <stc:C1>3.597191</stc:C1>
           <stc:C2>44.276197</stc:C2>
         </stc:LoLimit2Vec>
       - <stc:HiLimit2Vec>
           <stc:C1>3.398127</stc:C1>
           <stc:C2>44.560663</stc:C2>
         </stc:HiLimit2Vec>
       </limits>
     </bounds>
   - <support>
       <AreaType>Polygon</AreaType>
     - <Area coord_system_id="TT-ICRS-WAVELENGTH-TOPO">
       - <stc:Polygon>
         - <stc:Vertex>
           - <stc:Position>
               <stc:C1>3.597191</stc:C1>
               <stc:C2>44.276197</stc:C2>
             </stc:Position>
           </stc:Vertex>
         - <stc:Vertex>
           - <stc:Position>
```


erminé

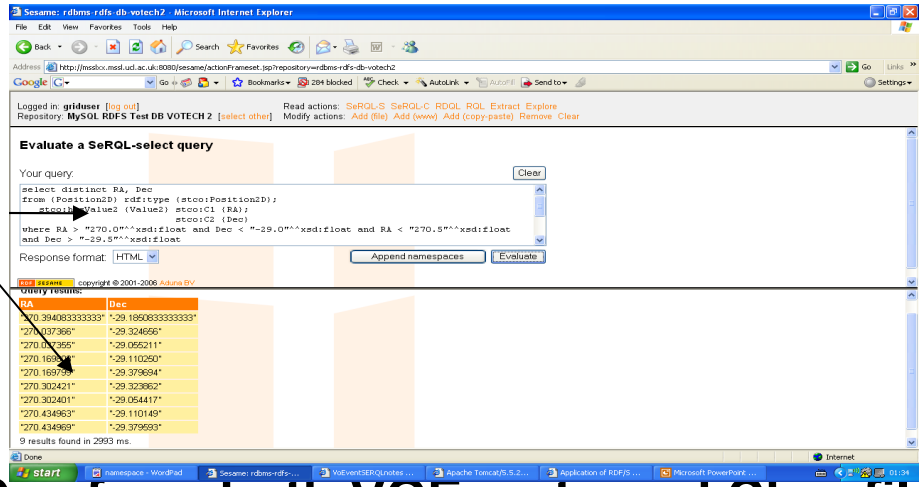
Internet

Implementation in Aladin an application?:

- Application: VOEvent /observation matching
- Put VOEvent and Dataset chars In the Same database: common xpath or xquery search
- Alternative: build ontologies on top of this and use ontology search engine (test phase with E.Auden within VOTECH)

Return RA and Dec where

RA > 270.0 && RA < 270.5 && Dec < -29.0 && Dec > -29.5



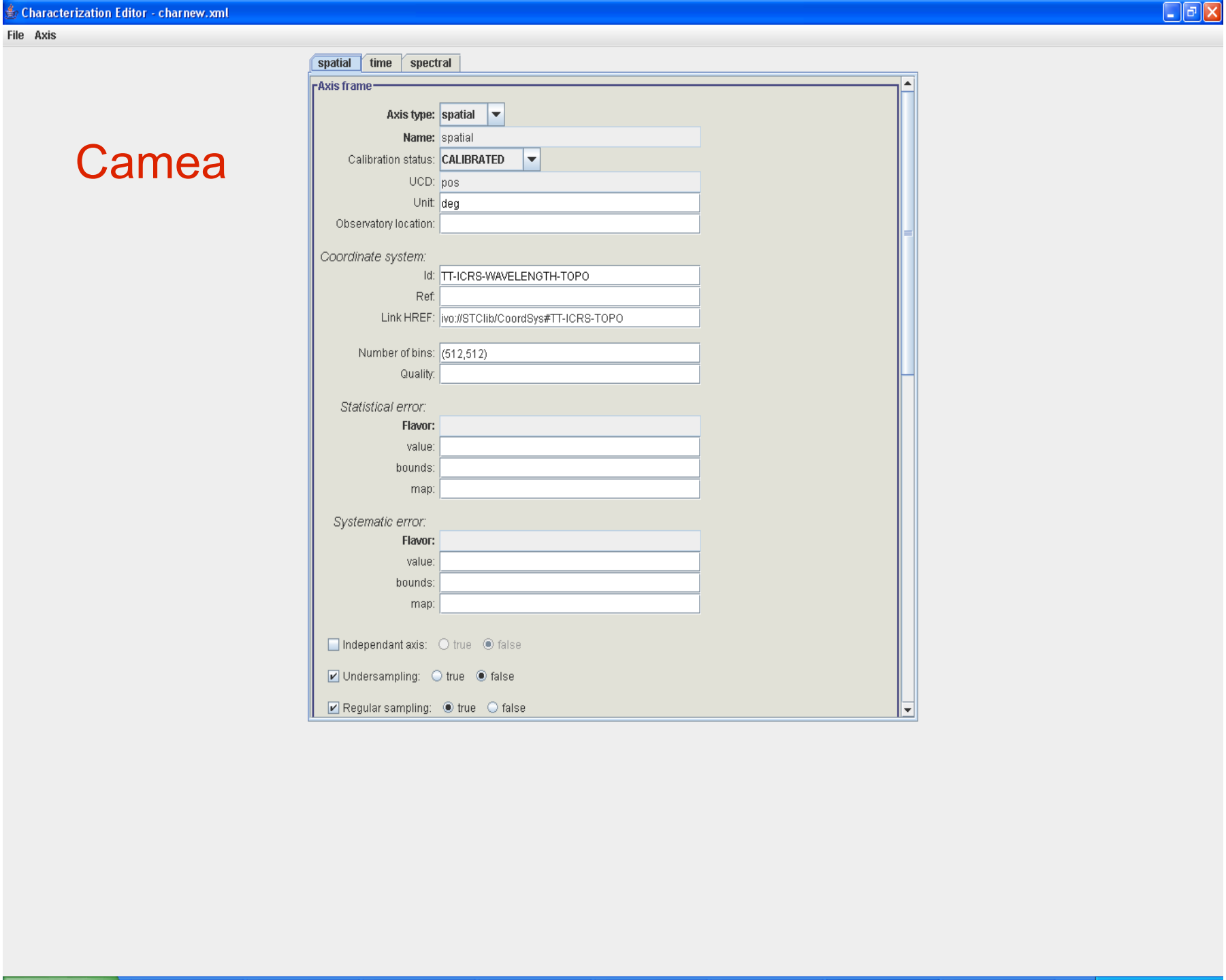
select filename, RA, and Dec from both VOEvents and Char files

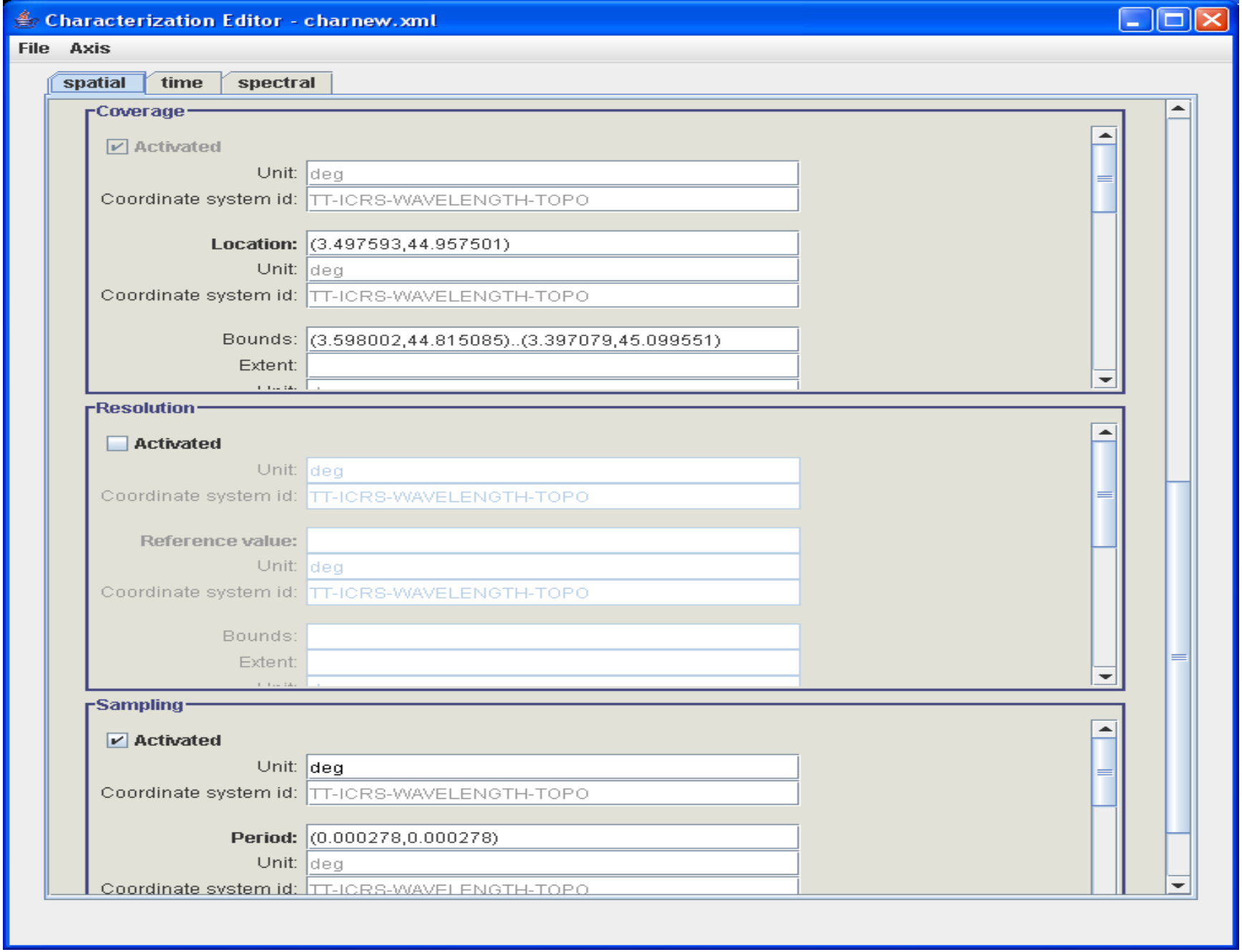
select distinct X, RA, Dec from {X} charo:hascharacterizationAxis {characterizationAxis} charo:hascoverage {coverage} charo:haslocation {location} charo:hascoord {coord} stco:hasPosition2D {Position2D} stco:hasValue2 {Value2} stco:C1 {RA}; stco:C2 {Dec} union select X, RA, Dec from {X} voeo:hasWhereWhen {WhereWhen} voeo:hasObsDataLocation {ObsDataLocation} stco:hasObservationLocation {ObservationLocation} stco:hasAstroCoords {AstroCoords} stco:hasPosition2D {Position2D} stco:hasValue2 {Value2} stco:C1 {RA}; stco:C2 {Dec} using namespace voeo = <http://wiki.eurovotech.org/twiki/bin/viewfile/VOTech/VoEventOntology?rev=1;filename=VOEvent1.1.owl>, stco = <http://wiki.eurovotech.org/twiki/bin/viewfile/VOTech/StcOntology?rev=3;filename=STC1.3.owl>, charo = <http://eurovotech.org/twiki/bin/viewfile/VOTech/CharacterisationOntology?rev=1;filename=characterisation1.0.owl>

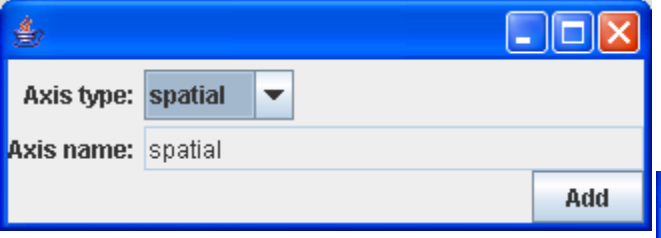
CAMEA: the characterization editor

- CAMEA helps to write characterization implemented in XML for a dataset.
  - Create CharAxis (spatial, time, spectral or generic)
  - Enter values in appropriate fields
  - Save the content
- Possible to visualize a preexisting dataset -→convivial way of reading metadata
- Modifying a dataset characteriation and saving it
- Original purpose give charcaterisation of astronomical catalogues

Camea


Characterization Editor - charnew.xml
File Axis
spatial time spectral
Axis frame
Axis type: spatial
Name: spatial
Calibration status: CALIBRATED
UCD: pos
Unit: deg
Observatory location:
Coordinate system:
Id: TT-ICRS-WAVELENGTH-TOPO
Ref:
Link HREF: ivo://STClib/CoordSys#TT-ICRS-TOPO
Number of bins: (512,512)
Quality:
Statistical error:
Flavor:
value:
bounds:
map:
Systematic error:
Flavor:
value:
bounds:
map:
Independant axis: true false
Undersampling: true false
Regular sampling: true false


Characterization Editor - charnew.xml
File
Axis
spatial
time
spectral
Coverage
Activated
Unit:
deg
Coordinate system id:
TT-ICRS-WAVELENGTH-TOPO
Location:
(3.497593,44.957501)
Unit:
deg
Coordinate system id:
TT-ICRS-WAVELENGTH-TOPO
Bounds:
(3.598002,44.815085)..(3.397079,45.099551)
Extent:
Resolution
Activated
Unit:
deg
Coordinate system id:
TT-ICRS-WAVELENGTH-TOPO
Reference value:
Unit:
deg
Coordinate system id:
TT-ICRS-WAVELENGTH-TOPO
Bounds:
Extent:
Sampling
Activated
Unit:
deg
Coordinate system id:
TT-ICRS-WAVELENGTH-TOPO
Period:
(0.000278,0.000278)
Unit:
deg
Coordinate system id:
TT-ICRS-WAVELENGTH-TOPO



Characterization Editor (modified)

File Axis

spatial

Axis frame

Axis type:	spatial
Name:	spatial
Calibration status:	CALIBRATED
UCD:	pos
Unit:	deg
Observatory location:	

Coordinate system:

Id:	TT-ICRS-TOPO
Ref:	
Link HREF:	ivo://STClib/CoordSys#TT-ICRS-TOPO
Number of bins:	16 16
Quality:	

Statistical error:

Flavor:	statistical
value:	0.00055
bounds:	
map:	

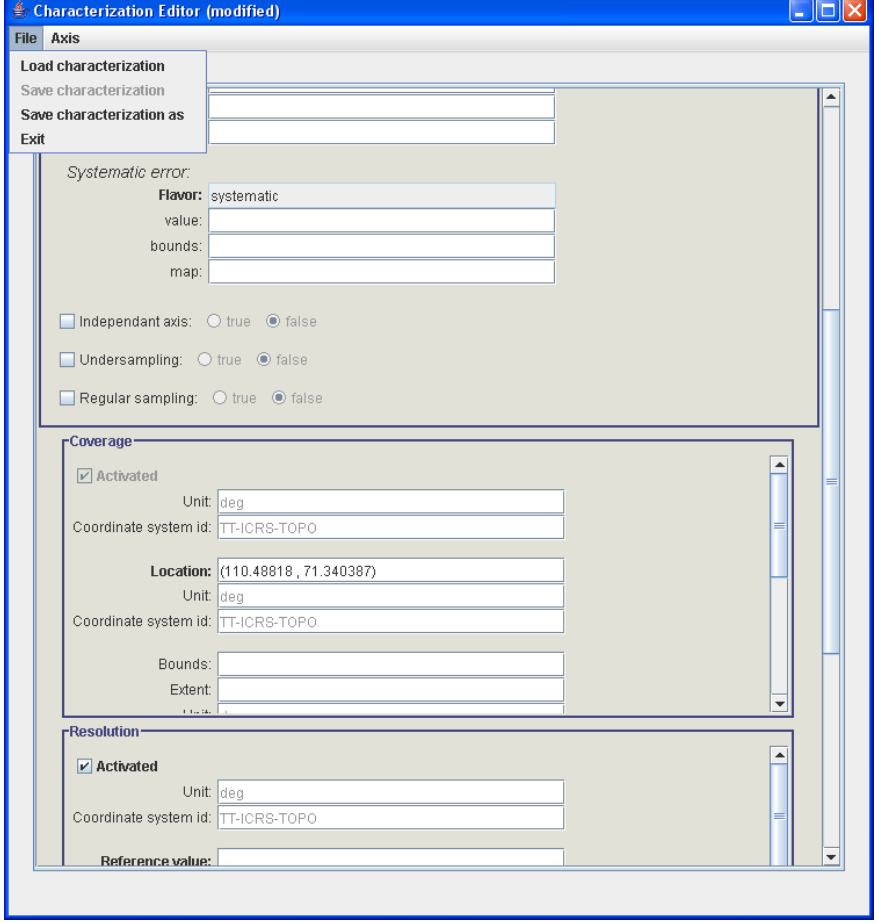
Systematic error:

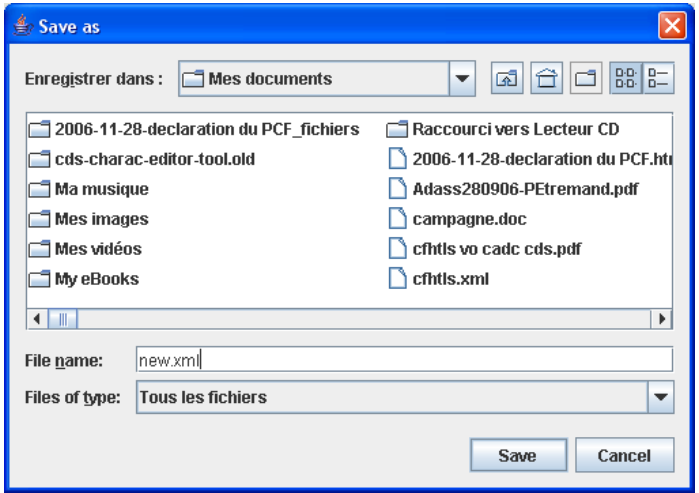
Flavor:	systematic
value:	
bounds:	
map:	

☐ Independant axis: ○ true ◉ false

☐ Undersampling: ○ true ◉ false

☐ Regular sampling: ○ true ◉ false


Characterization Editor (modified)
File
Axis
Load characterization
Save characterization
Save characterization as
Exit
Systematic error:
Flavor: systematic
value:
bounds:
map:
Independant axis: true false
Undersampling: true false
Regular sampling: true false
Coverage
Activated
Unit: deg
Coordinate system id: TT-ICRS-TOPO
Location: (110.48818 , 71.340387)
Unit: deg
Coordinate system id: TT-ICRS-TOPO
Bounds:
Extent:
Resolution
Activated
Unit: deg
Coordinate system id: TT-ICRS-TOPO
Reference value:


Save as
Enregistrer dans : Mes documents
2006-11-28-declaration du PCF_fichiers
cds-charac-editor-tool.old
Ma musique
Mes images
Mes vidéos
My eBooks
Raccourci vers Lecteur CD
2006-11-28-declaration du PCF.htr
Adass280906-PEtremand.pdf
campagne.doc
cfhtls vo cadc cds.pdf
cfhtls.xml
File name: new.xml
Files of type: Tous les fichiers
Save
Cancel

C:\Documents and Settings\Administrateur\Mes documents\new.xml - Microsoft Internet Explorer

Fichier Edition Affichage Favoris Outils ?

Précédente Rechercher Favoris

Adresse C:\Documents and Settings\Administrateur\Mes documents\new.xml

Pour vous aider à protéger votre ordinateur, Internet Explorer a restreint l'affichage du contenu actif de ce fichier, qui pourrait accéder à votre ordinateur. Cliquez ici pour afficher plus d'options.


```
<?xml version="1.0" encoding="UTF-8" ?>
- <characterisation xmlns="http://www.ivoa.net/xml/Characterisation/Characterisation-v1.0.xsd"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:stc="http://www.ivoa.net/xml/STC/stc-v1.30.xsd"
    xmlns:xlink="http://www.w3.org/1999/xlink" xsi:schemaLocation="urn:vo-characterization characterization.0.97.xsd">
  - <characterisationAxis>
      <axisName>spatial</axisName>
      <calibrationStatus>CALIBRATED</calibrationStatus>
      <ucd>pos</ucd>
      <unit>deg</unit>
      <coordsystem id="TT-ICRS-TOPO" xlink:href="ivo://STClib/CoordSys#TT-ICRS-TOPO" />
      <ObsyLoc />
    - <numBins2>
        <I1>16</I1>
        <I2>16</I2>
      </numBins2>
    - <accuracy>
      - <statError>
        - <ErrorRefVal>
            <Error>0.00055</Error>
          </ErrorRefVal>
          <flavor>statistical</flavor>
        </statError>
      - <sysError>
          <flavor>statistical</flavor>
        </sysError>
      </accuracy>
    - <coverage>
      - <location>
        - <coord>
          - <Position2D xmlns="http://www.ivoa.net/xml/STC/stc-v1.30.xsd">
            - <Value2>
                <C1>110.48818</C1>
                <C2>71.340387</C2>
```

ASPID-SR

- Database stores characterization XML tree for each dataset. (retrievable)
- Searching by xpath constraint in the WHERE statement of the SQL query
- Mapping of SSA queries to constraints on char

Characterisation DM implementation

ASPID-SR (SAO RAS)

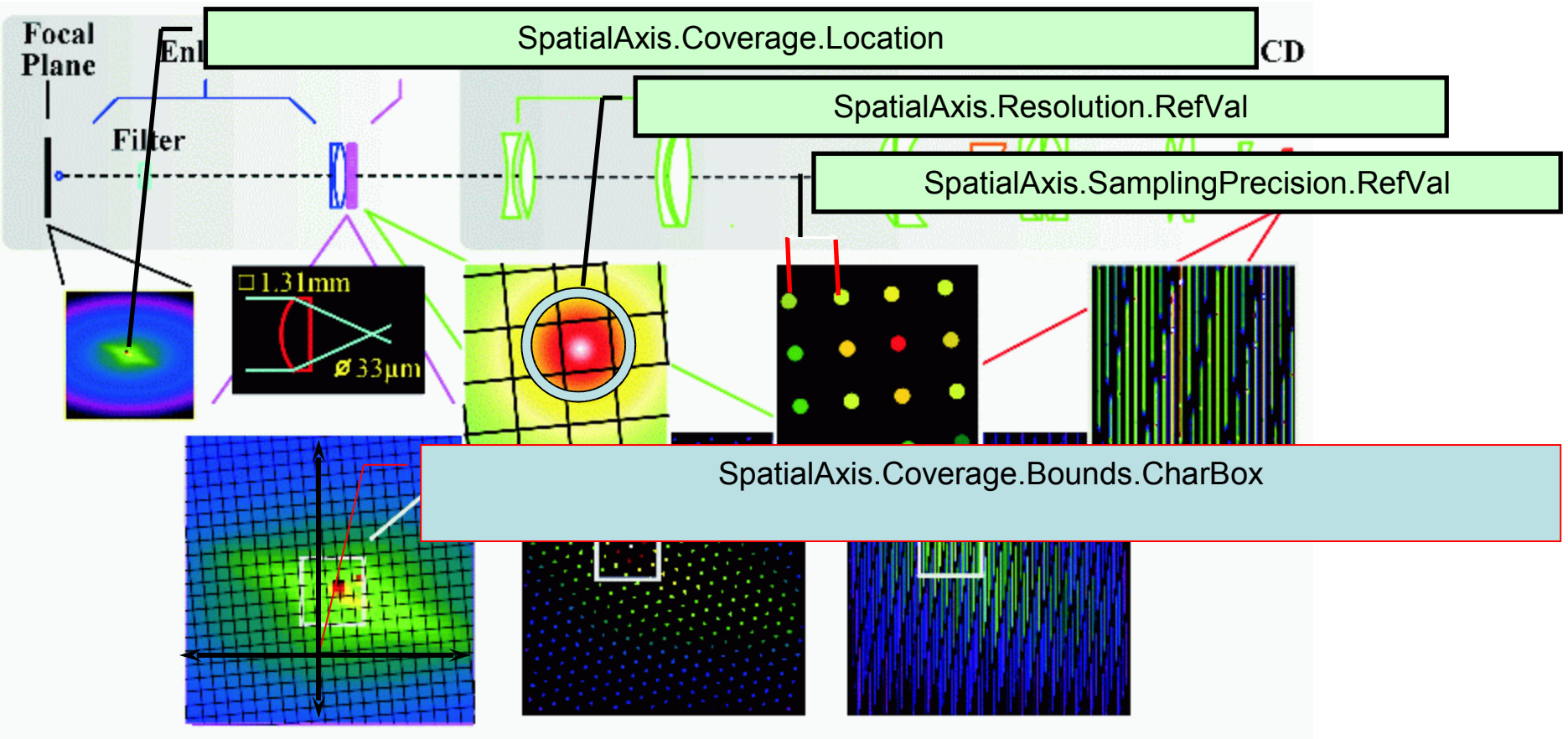
IgorChilingarian, Yvan Zolotukin

Computation of Metadata

- Long-slit spectra – see Characterisation User's Guide by Alberto Micol
- 3D spectroscopy (IFU data & Fabry-Perot datacubes). Described in ADASS-XV proceedings (Chilingarian et al., 2005)…

Characterising IFU datasets

Only first two levels (Location/Ref.Value and Bounds) should be provided for the whole dataset

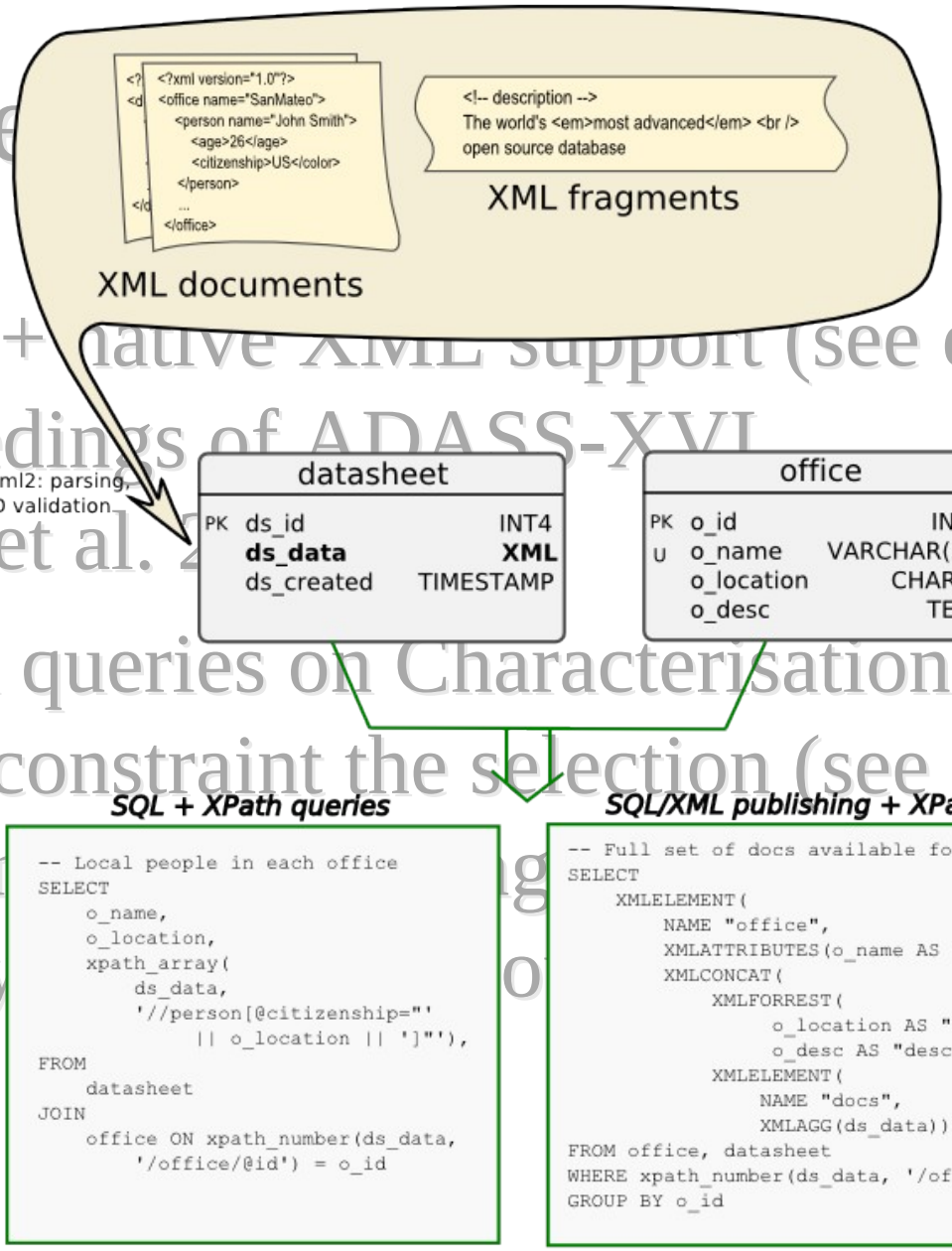


SSAP Query

- BAND =>
  SpectralAxis.Coverage.Location.Coord.stc:Spectral.stc:Value
- SPECRES =>
  SpectraAxis.Resolution.ResolutionRefVal.ReferenceValue
- SPATRES =>
  SpatialAxis.Resolution.ResolutionRefVal.Resolution2.stc:C2
- TIME =>
  TimeAxis.Coverage.Location.Coord.stc:Time.stc:Value

Some

- PostgreSQL + native XML support (see details in the proceedings of ADASS-XVI -Zolotukhin et al. 2
- Using XPath queries on Characterisation Metadata to constraint the selection (see an application in ng Spectroscopy o



Conclusion

- There are running applications with First implementations are accessible now

  (not only demos in IVOA meetings)
- DAL will make extensive reuse of this model for data discovery.
- Usage of these implementations is not limited to DAL: service mangement and applications
- We look forward to new implementations and for tools making usage of it.