

Euro-VO Resources Validation Status

*Costas Vrioni, Juan Gonzalez, Christophe Arviset
ESAC Science Data Centre,*

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Reference: VO Service Compliance Statistics

Status: Issued

ESA UNCLASSIFIED - Releasable to the Public

Euro-VO Registry



HOME

WELCOME TO THE EURO-VO FULL HARVESTABLE VO RESOURCE REGISTRY

The new Euro-VO Registry offers you the following main functionalities:

- **For astronomers and end users:** Search the VO resources through the Simple Search Panel, the Advanced Search or through the expert ADQL Search Panel.
- **For data publishers:** Host your resources with EuroVO, create and update your own VO Resources via a password-protected interface, check their compliance with the associated IVOA standards.
- **For VO Applications developers and for other IVOA Registries:** Harvest the registry, retrieve individual resources, or search the registry through its programmatic OAI-PMH, RI1 and RegTAP interfaces.



TOP FEATURES



SEARCH

Search through all data.



ADQL SEARCH

Search with ADQL query through all data.



STANDALONE VALIDATION

This page is used for validating standalone.



INFO

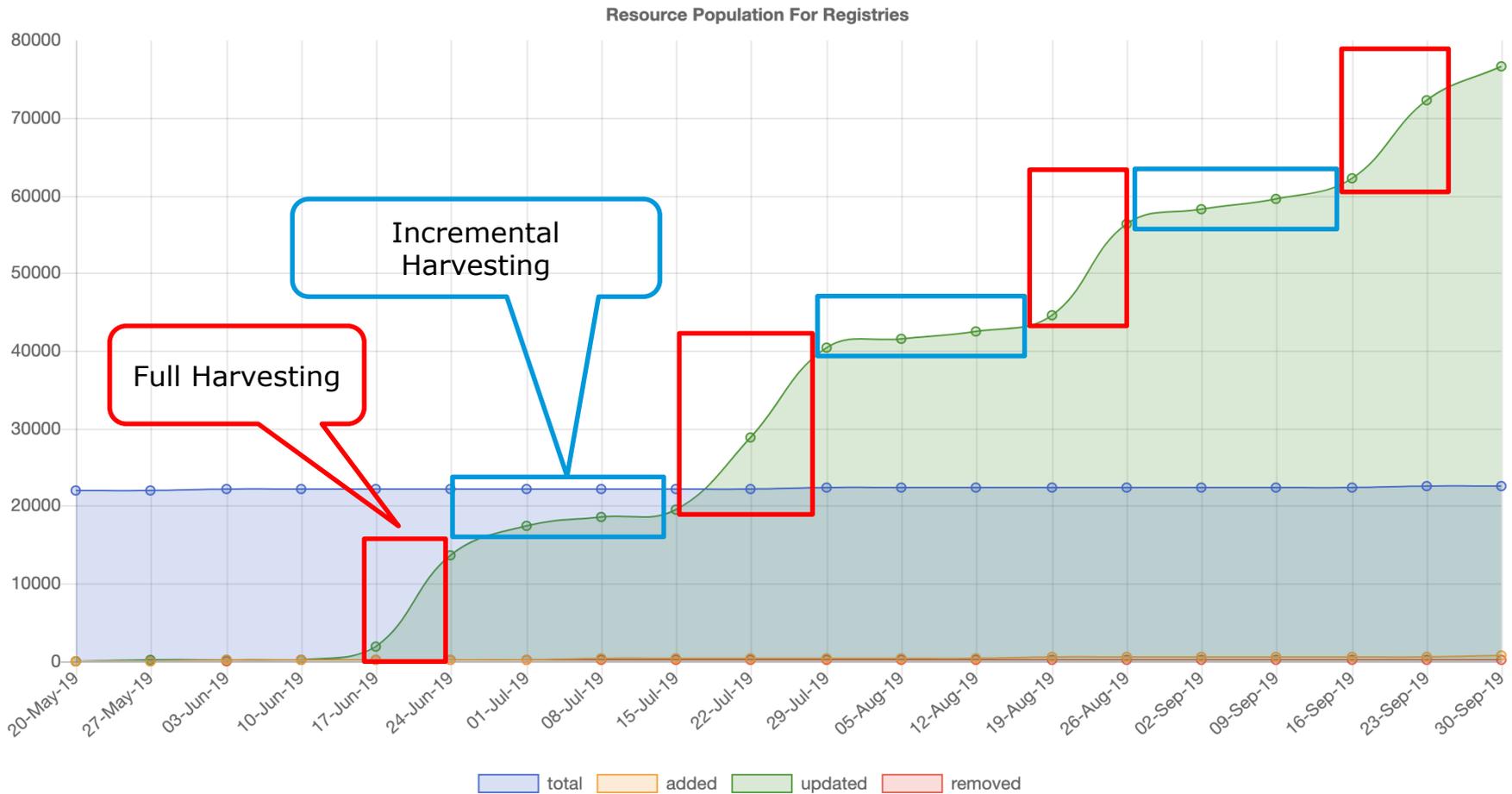
Information related to EuroVO Registry Services.



CONTACT

For questions, suggestions or problem reports, contact our [EuroVO Registry Support](#).

VOResources evolution



Many updates the last months...

Compliance mappings



- **Compliant** (no requirement fails)

- A++** no criterion fails
- A+** no requirement, warning or recommendation fails
- A** no requirement or warning fails, but at least one recommendation fails
- B** no requirement fails, but at least one warning fails

- **partially compliant** (some (but not all) requirements fail)

- C** at least one (1) req fails, but at least one (1) req equally succeeds
- C-** at least two (2) reqs fail, but at least one (1) req equally succeeds
- C--** at least three (3) reqs fail, but at least one (1) req equally succeeds

- **not compliant** (all requirements fail)

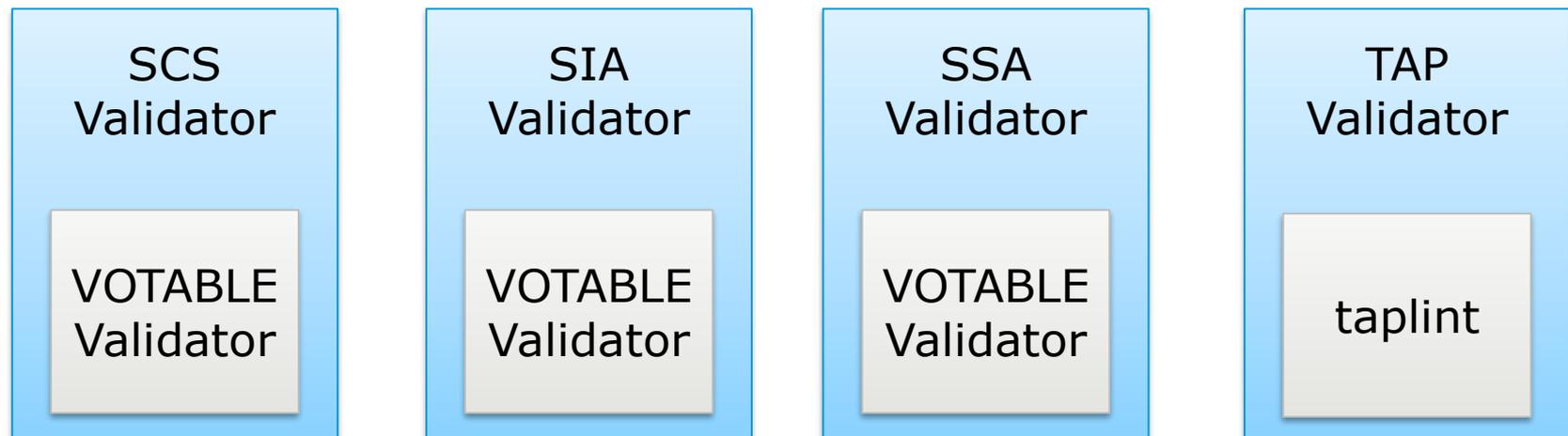
- D** all reqs fail but some other criterion (of lesser importance) succeeds
- E** no criterion succeeds

Criterion Type	
name	description
REQUIREMENT	Tests drawn from 'MUST' statements in the respective standard
WARNING	Tests drawn from strongly encouraged 'SHOULD' statements in the respective standard
RECOMMENDATION	Tests drawn from 'SHOULD' statements in the respective standard
EXTRA	Criteria not defined in the IVOA 'Service Validation' wiki

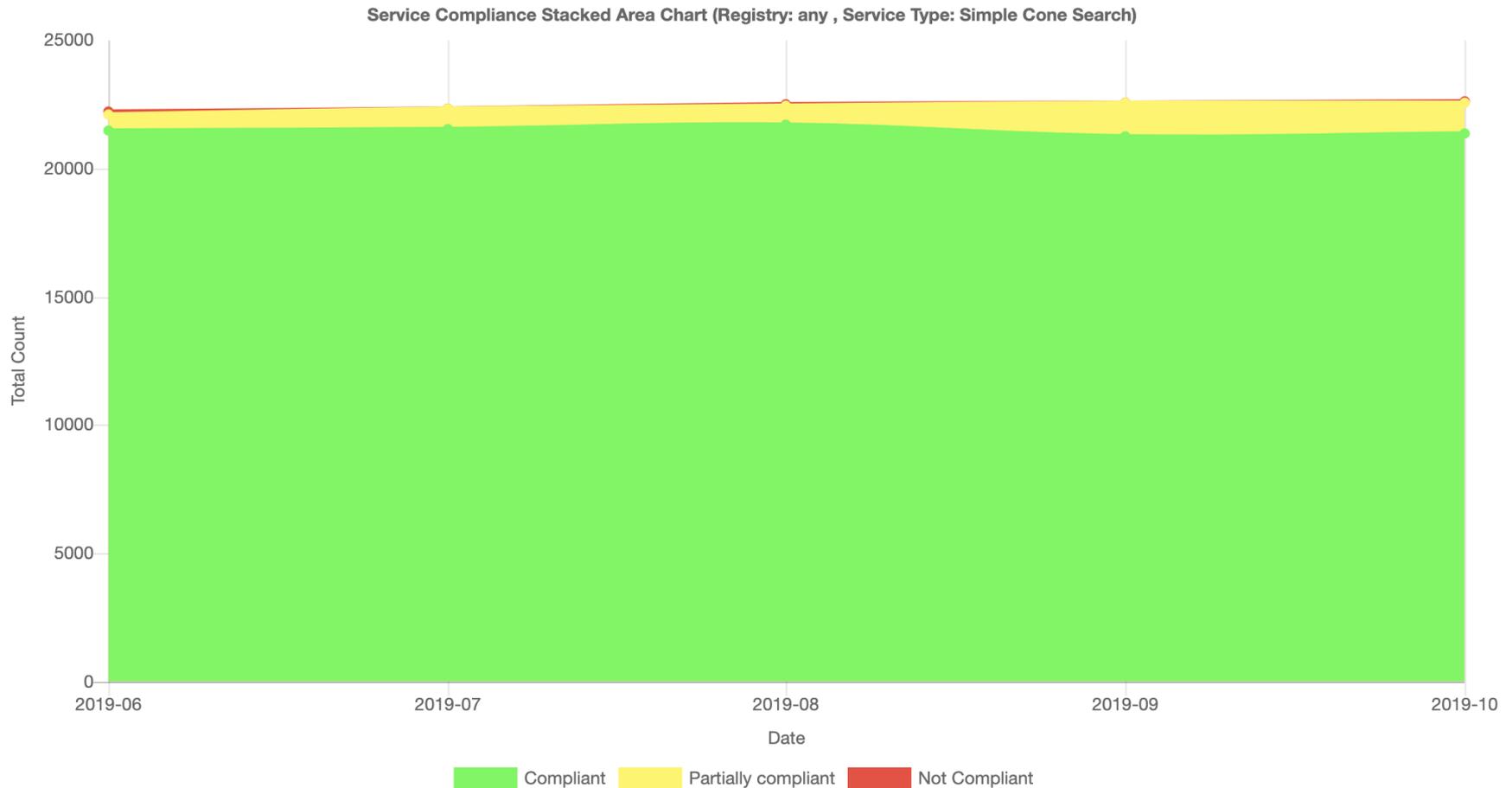
Euro-VO Registry validators for protocols:

1. Simple Cone Search (SCS) v1.03
2. Simple Image Search (SIA) v1.0
3. Simple Spectral Access (SSA) v1.1
4. Table Access Protocol (TAP) v1.0 using Taplint v3.1-5

* VOTABLE Validator for SCS, SIA & SSA



SCS Services Compliance – all registries

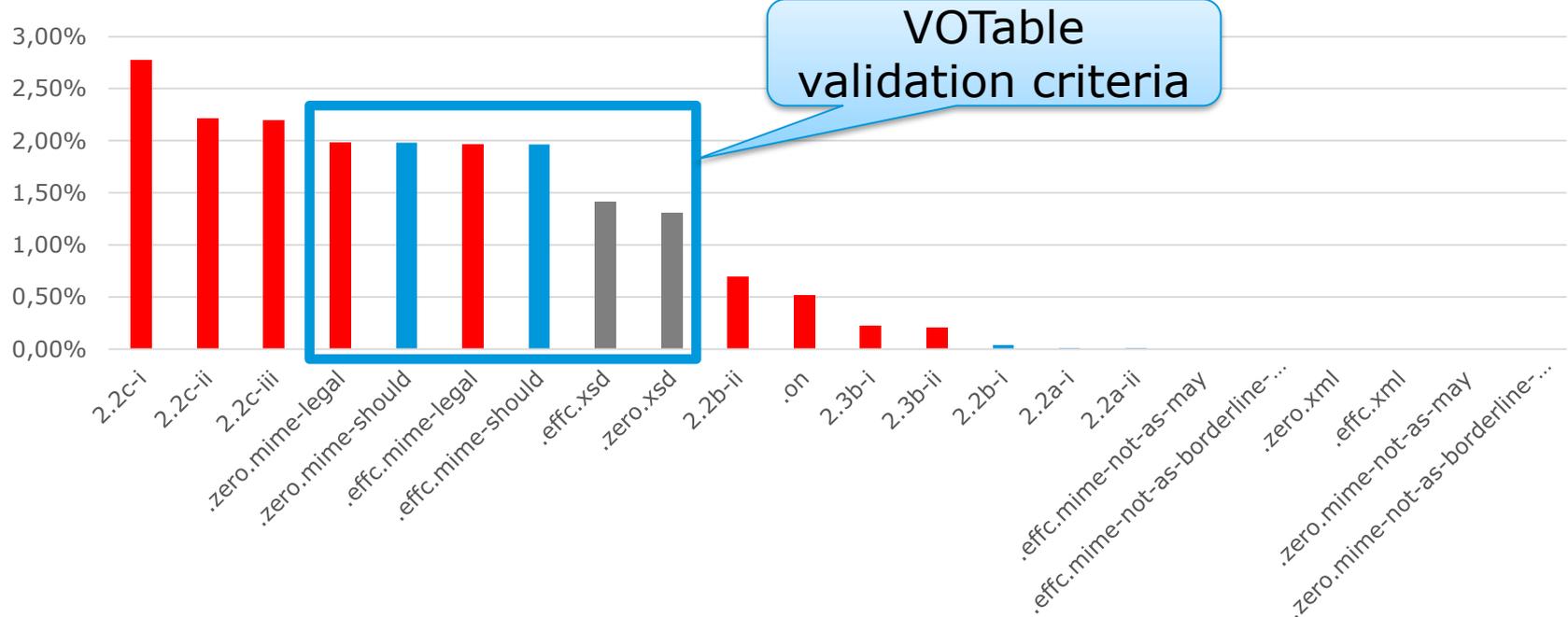


**Most of the services are compliant...
No particular action needed**

SCS Services Validation Analysis



Validation criteria failed for SCS Services



Criterion Type	
name	description
REQUIREMENT	Tests drawn from 'MUST' statements in the respective standard
WARNING	Tests drawn from strongly encouraged 'SHOULD' statements in the respective standard
RECOMMENDATION	Tests drawn from 'SHOULD' statements in the respective standard
EXTRA	Criteria not defined in the IVOA 'Service Validation' wiki

SCS Services Validation Analysis

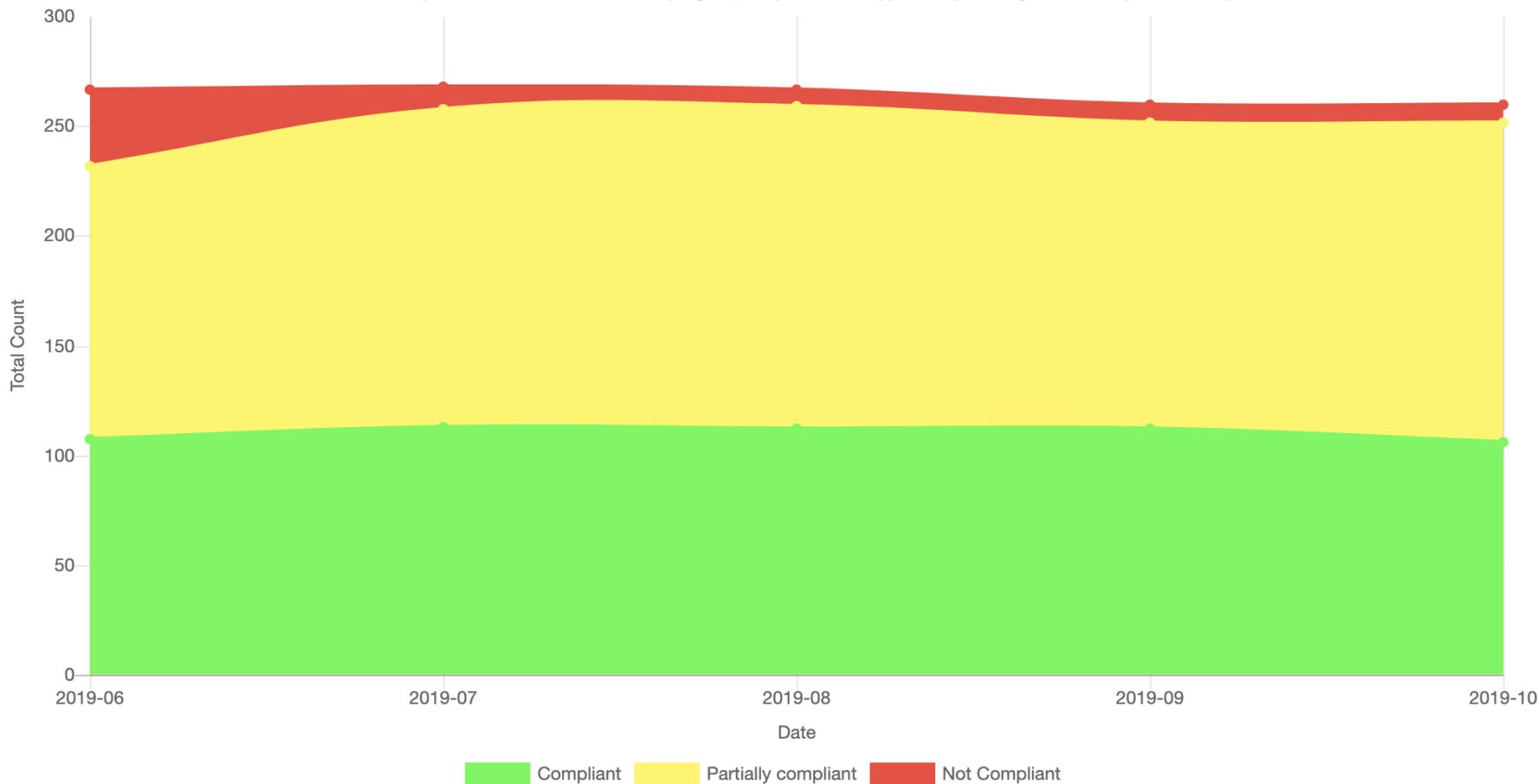


val_code	criterion_type	description
2.2c-i	REQUIREMENT	The VOTable MUST comply with these conditions: [...] Exactly one FIELD must have ucd='ID_MAIN', with an array character type (fixed or variable length)
2.2c-ii	REQUIREMENT	The VOTable MUST comply with these conditions: [...] Exactly one FIELD must have ucd='POS_EQ_RA_MAIN', with type double
2.2c-iii	REQUIREMENT	The VOTable MUST comply with these conditions: [...] Exactly one FIELD must have ucd='POS_EQ_DEC_MAIN', with type double
.zero.mime-legal	REQUIREMENT	The MIME type of the zero response has a legal value ('text/xml', 'text/xml;content=x-votable' or 'text/xml;votable')
.zero.mime-should	RECOMMENDATION	The MIME type of the zero response has the recommended value ('text/xml')
.effc.mime-legal	REQUIREMENT	The MIME type of the effective response has a legal value ('text/xml', 'text/xml;content=x-votable' or 'text/xml;votable')
.effc.mime-should	RECOMMENDATION	The MIME type of the effective response has the recommended value ('text/xml')
.effc.xsd	EXTRA	The effective response is XSD-valid XML
.zero.xsd	EXTRA	The zero response is XSD-valid XML
2.2b-ii	REQUIREMENT	The effective response has to contain some data
.on	REQUIREMENT	The service is ON
2.3b-i	REQUIREMENT	no INFO elements with @name='Error' should appear in the zero response
2.3b-ii	REQUIREMENT	no INFO elements with @name='Error' should appear in the effective response
2.2b-i	REQUIREMENT	The zero response contains no data
2.2a-i	REQUIREMENT	The service must respond with an XML document in the VOTable format [for the zero URL]
2.2a-ii	REQUIREMENT	The service must respond with an XML document in the VOTable format [for the effective URL]

SIA Services Compliance – all registries



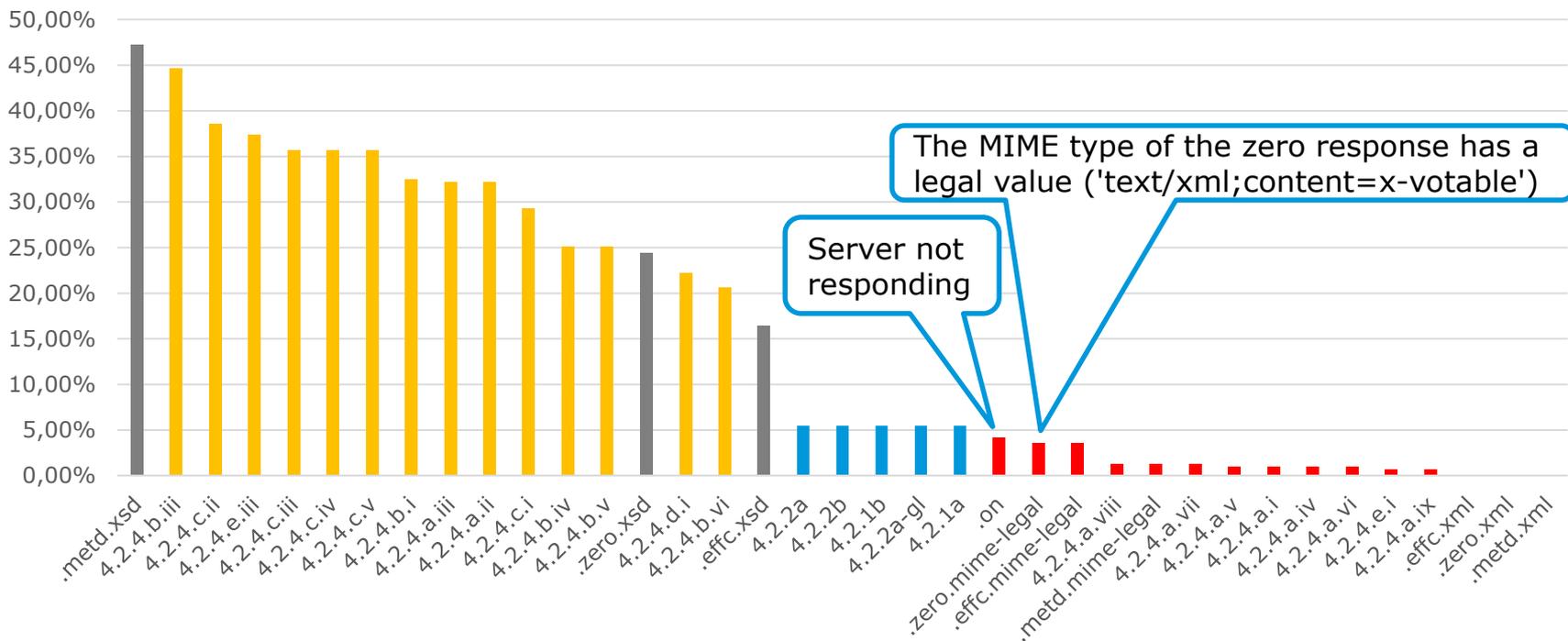
Service Compliance Stacked Area Chart (Registry: any , Service Type: Simple Image Access Specification)



SIA Services Validation Analysis



Validation criteria failed for SIA Services



Criterion Type	
name	description
■ REQUIREMENT	Tests drawn from 'MUST' statements in the respective standard
■ WARNING	Tests drawn from strongly encouraged 'SHOULD' statements in the respective standard
■ RECOMMENDATION	Tests drawn from 'SHOULD' statements in the respective standard
■ EXTRA	Criteria not defined in the IVOA 'Service Validation' wiki

VOTABLE related issues

Issues common to all the SCS, SIA & SSA Services :

MIME type not set.
Erratum to change it from
Requirement to Warning?

1. Mime type (VOTABLE 1.3 chapter 8)

.metd.mime-legal : The MIME type of the zero response has a legal value ('text/xml;content=x-votable')

Chapter 8: "A VOTable document should be introduced by a Multipurpose Internet Mail Extensions media type, or MIME type."

Known issue...
Inform service owners?

2. Structure of DATA/TABLEDATA (VOTABLE 1.3 chapter 5.1)



```
<DATA>
<TABLEDATA>
  <TR>
    <TD>00</TD>
    <TD>00</TD>
    <TD> 0.00000000  0.00000000</TD>
    <TD> 0.0000000  0.00000000</TD>
    <TD>AIRGLOW</TD>
    <TD>22000</TD>
    <TD>2479.000</TD>
```



```
<TABLEDATA>
  <DATA>
    <TR>
      <TD>00</TD>
      <TD>00</TD>
      <TD> 0.00000000  0.00000000</TD>
      <TD> 0.0000000  0.00000000</TD>
      <TD>AIRGLOW</TD>
      <TD>22000</TD>
      <TD>2479.000</TD>
```

4.2.1 Tag type='results'

- 5,5% of services failed

- 4.2.1a **REQ**: The VOTable must contain a RESOURCE element, identified with the tag type='results', containing a single TABLE element which contains the results of the query

```
<RESOURCE type="results">
```

Is only one attribute..
Erratum to change it from
Requirement to Warning?

- 4.2.1b **REC**: If multiple resources are present it is recommended that the query results be returned in the first resource element

4.2.2 QUERY_STATUS value="OK"

- 12% of services failed

```
<VOTABLE xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://vizier.u-strasbg.fr/xml/VOTable-1.1.xsd">
  <INFO name="QUERY_STATUS" value="OK"/>
  <INFO name="FieldsUrl">http://...</INFO>
  <INFO name="CutOutUrl">http://...</INFO>
  <RESOURCE>
    <PARAM datatype="char" name="INPUT:POS" value="0.0,0.0" arraysize="*" />
    <PARAM datatype="char" name="INPUT:SIZE" value="0.000" arraysize="*" />
  </RESOURCE>
</VOTABLE>
```

Erratum to support both?

Wrong position it should be in RESOURCE not in VOTABLE

“The RESOURCE element should contain an INFO with name="QUERY_STATUS". Its value attribute should set to "OK" if the query executed successfully, regardless of whether any matching images were found. All other possible values for the value attribute are described in section 4.3 below.”

4.2.4a Image Metadata.

- 7% of services failed
- 4.2.4a i-viii REQ & WAR : Field arraysize is not *

Erratum to clarify the usage

```
<FIELD ID="naxis" name="naxis" ucd="VOX:Image_Naxis" datatype="int" arraysize="2">  
  <DESCRIPTION>  
    An array giving the length in pixels of each image axis.  
  </DESCRIPTION>  
</FIELD>
```

The arraysize="*" is interpreted as regular expression and not as is, therefore some services are putting number on it to declare the dimension when another element is for this ..(use the image naxes for the dimension?)

- Exactly one field must have ucd="VOX:Image_Naxes", with datatype="int", specifying the number of image axes.
- Exactly one field must have ucd="VOX:Image_Naxis", with datatype="int", and arraysize="*", with the array value giving the length in pixels of each image axis.
- Exactly one field must have ucd="VOX:Image_Scale", with datatype="double", and arraysize="*", with the array value giving the scale in degrees per pixel of each image axis.
- Exactly one field must have ucd="VOX:Image_Format", with datatype="char", and arraysize="*", specifying the MIME-type of the object associated with the image ahref, e.g., "image/fits", "text/html", and so forth.

4.2.4b Coordinate System Metadata

- 40% of services failed but all are Warnings

Are using PARAM instead of FIELD

Case 1:

Is used:

```
<PARAM name="crefframe" ucd="VOX:STC_CoordRefFrame" datatype="char" arraysize="*" value="FK5">  
  <DESCRIPTION>Coordinate System Reference Frame</DESCRIPTION>  
</PARAM>
```

Instead of:

```
<FIELD ID="CoordRefFrame_109" name="CoordRefFrame" datatype="char" ucd="VOX:STC_CoordRefFrame" arraysize="*">  
  <DESCRIPTION>coordinate system reference frame</DESCRIPTION>  
</FIELD>
```

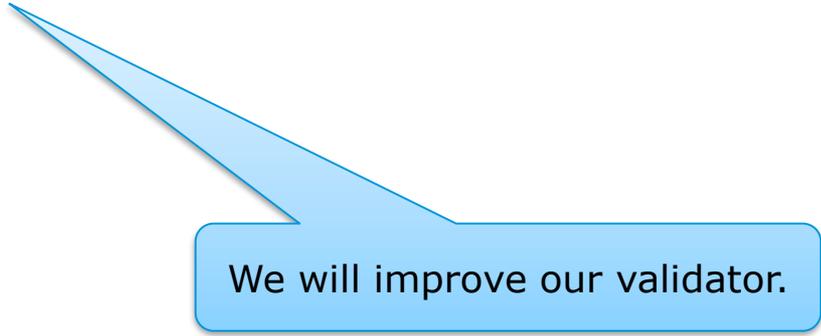
Change our validator?..

Case 2: No coordinates at all (are mandatory? Should they always exist?)

- Exactly one **field** should have ucd="VOX:STC_CoordRefFrame", with datatype="char", and arraysize="*", representing the coordinate system reference frame, selected from "ICRS", "FK5", "FK4", "ECL", "GAL", and "SGAL".
- Exactly one field should have ucd="VOX:WCS_CoordProjection", with datatype="char", and arraysize="3", ...
- Exactly one field should have ucd="VOX:WCS_CoordRefPixel", with datatype="double", ...
- Exactly one field should have ucd="VOX:WCS_CoordRefValue", with datatype="double"...
- Exactly one field should have ucd="VOX:WCS_CDMatrix", with datatype="double", and arraysize="*"...

Other issues:

1. More than 15% of the resources could not be tested and those we mark them as C-- partially compliant... We will use the "test query" to test them.

A blue callout box with a white border and a shadow, pointing towards the first list item. It contains the text 'We will improve our validator.'

We will improve our validator.

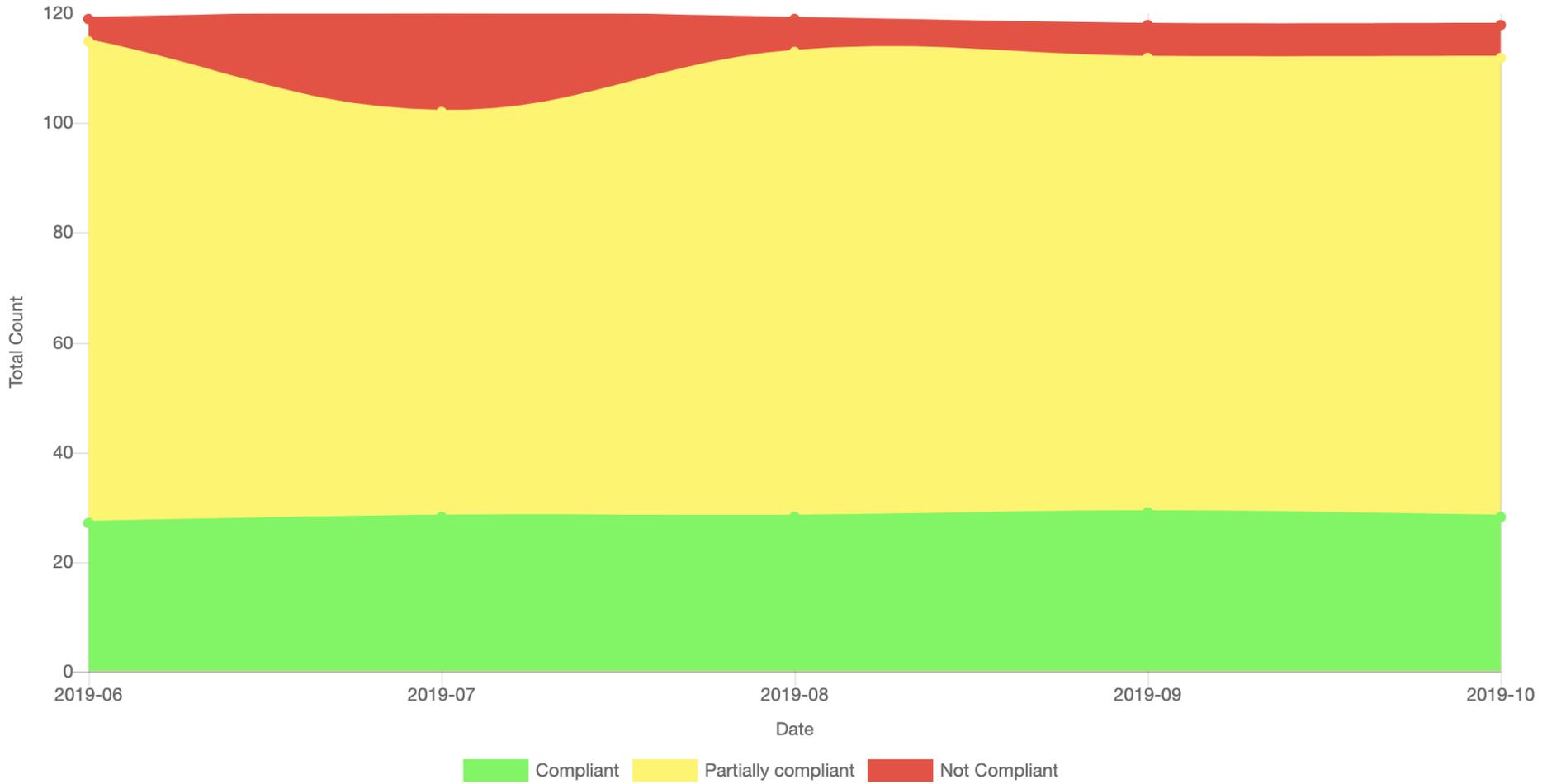
Potential actions to be taken:

- 1. Improve the standard:** erratum for all the 4.2.1.* , 4.2.2.* and 4.2.4.*?
- 2. Improve the Euro-VO Registry validator:**
 - a. Improve the validation by using the test query defined by the service itself.
- 3. Improve the services:**
 - a) Wrong structure in VOTABLE
 - b) Contact with the low Compliance Category services and report findings.

SSA Services Compliance – all registries



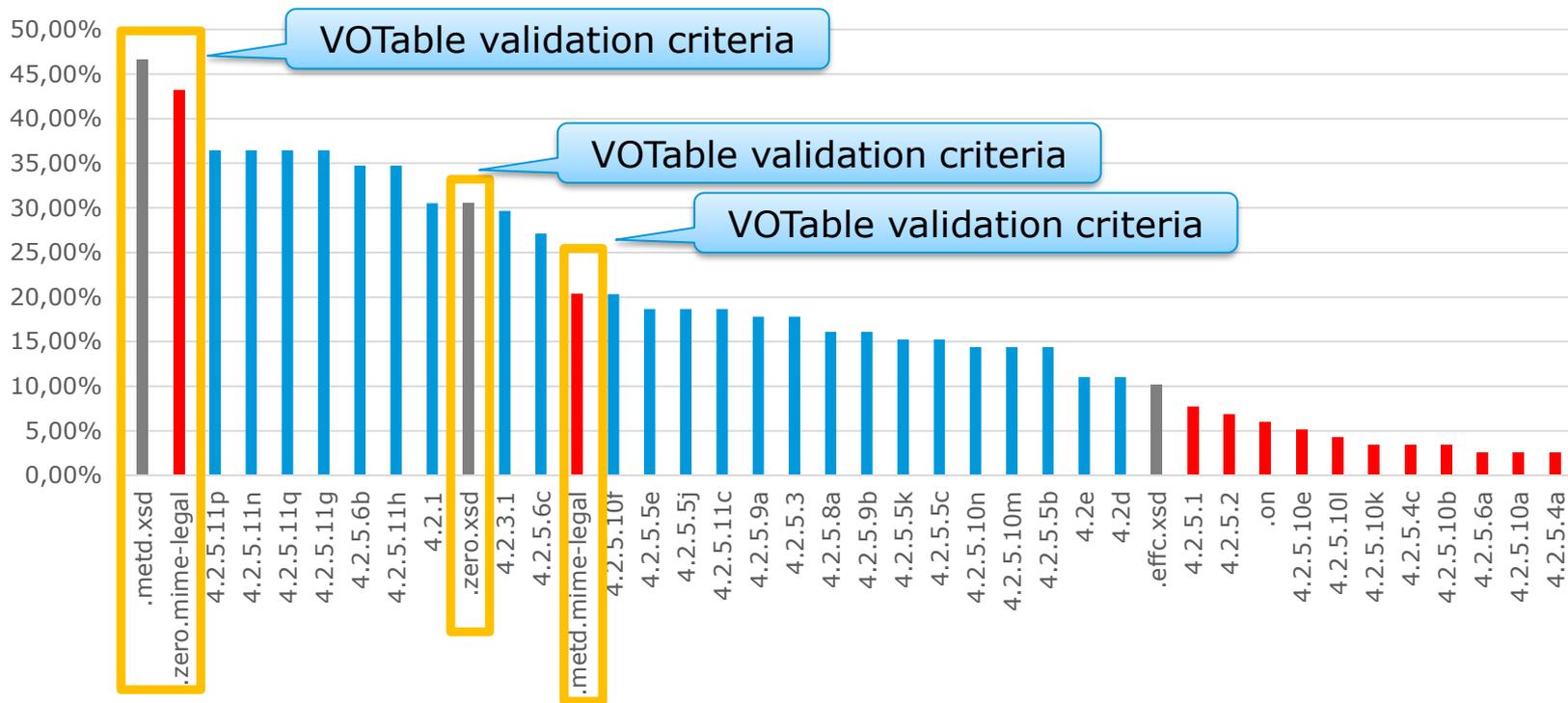
Service Compliance Stacked Area Chart (Registry: any , Service Type: Simple Spectral Access Protocol)



SSA Services Validation Analysis



Validation criteria failed for SSA Services



Criterion Type	
name	description
■ REQUIREMENT	Tests drawn from 'MUST' statements in the respective standard
■ WARNING	Tests drawn from strongly encouraged 'SHOULD' statements in the respective standard
■ RECOMMENDATION	Tests drawn from 'SHOULD' statements in the respective standard
■ EXTRA	Criteria not defined in the IVOA 'Service Validation' wiki



SSA Services Validation Analysis



val_code	val_type	
metd.xsd	EXTRA	The metadata response is XSD-valid XML
.zero.mime-legal	REQUIREMENT	The MIME type of the zero response has a legal value ('text/xml:content=x-votable')
4.2.5.11p	RECOMMENDATION	Char.SpatialAxis.Calibration Type of coord calibration REC
4.2.5.11n	RECOMMENDATION	Char.SpatialAxis.Accuracy.StatError Astrometric statistical error REC
4.2.5.11q	RECOMMENDATION	Char.SpatialAxis.Resolution Spatial resolution of data REC
4.2.5.11g	RECOMMENDATION	Char.SpectralAxis.Calibration Type of coord calibration REC
4.2.5.6b	RECOMMENDATION	Curation.PublisherDID Publisher's ID for the dataset REC
4.2.5.11h	RECOMMENDATION	Char.SpectralAxis.Resolution Spectral resolution FWHM REC
4.2.1	RECOMMENDATION	UTYPEs of standard fields are required for identification of interface elements and must be given
.zero.xsd	EXTRA	The zero response is XSD-valid XML
4.2.3.1	RECOMMENDATION	Query.Score Degree of match to query params REC
4.2.5.6c	RECOMMENDATION	Curation.PublisherDID Publisher's ID for the dataset REC
.metd.mime-legal	REQUIREMENT	The MIME type of the metadata response has a legal value ('text/xml;content=x-votable')
4.2.5.10f	RECOMMENDATION	Char.TimeAxis.Coverage.Bounds.Extent Total elapsed exposure time REC
4.2.5.5e	RECOMMENDATION	DataID.CreatorDID Creator assigned dataset identifier REC
4.2.5.5j	RECOMMENDATION	DataID.DataSource Original source of data REC
4.2.5.11c	RECOMMENDATION	Char.FluxAxis.Calibration Type of flux calibration REC
4.2.5.9a	RECOMMENDATION	Char.FluxAxis.Ucd ucd for flux REC
4.2.5.3	RECOMMENDATION	Access.Size Estimated (not actual) dataset size REC

URL: <http://www.ivoa.net/documents/SSA>

1. VOTABLE criteria fails for more than 40%

.zero.mime-legal: REQUIREMENT “The MIME type of the zero response has a legal value (*'text/xml;content=x-votable'*)”

.metd.mime-legal: REQUIREMENT “The MIME type of the metadata response has a legal value (*'text/xml;content=x-votable'*)”

Our SSA Validator requires each field appears exactly once.

2. Many REC (4.2.5.x) failures. They seem to fail for 40% of the services.

The reason is that the following fields are used more than once:

- Access.Reference
- Access.Format
- Access.Size
- Dataset.DataModel
- **Dataset.Length**
- DataID.Title
- DataID.Creator
- DataID.Collection
- DataID.CreatorDID
- DataID.DataSource
- ...

ERRATA: this fields should appear once and only once in the response

The specification identifies this field as mandatory but it does not look easy to populate as implies an inspection of all the spectral data (it is basically the number of points of the spectra). Make it optional?

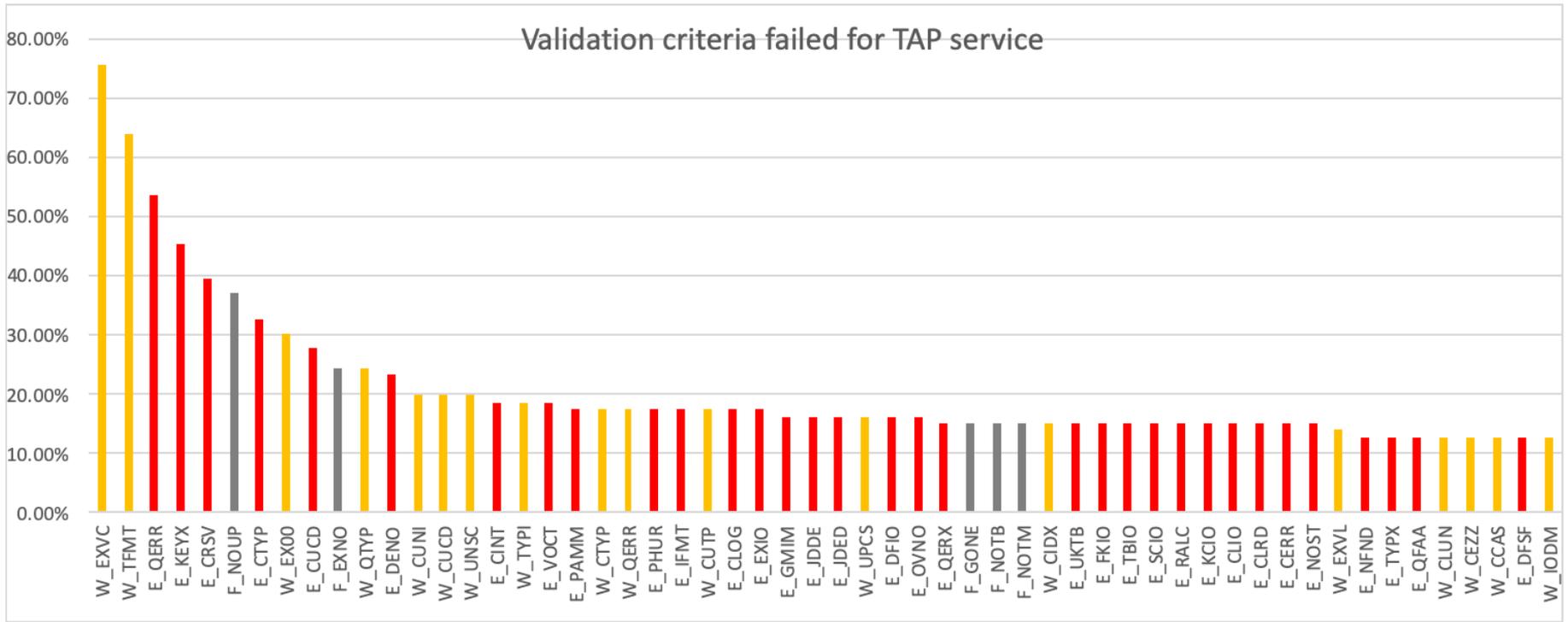
Potential actions to be taken:

- 1. Update the Standard (errata?):** There are many REQ failures related to VOTABLE and REC (4.2.5.x) failures related to SSA . They seem to fail for 40% of the services. Suggest an erratum?
- 2. Improve the validator:**
 - a. Improve the validation by using the test query defined by the service itself.
- 3. Improve the services:**
 - a) Wrong structure in VOTABLE.
 - b) Contact with the low Compliance Category services and report findings.

TAP Services Compliance – all registries



TAP Services Validation Analysis



Criterion Type	
name	description
■ REQUIREMENT	Tests drawn from 'MUST' statements in the respective standard
■ WARNING	Tests drawn from strongly encouraged 'SHOULD' statements in the respective standard
■ RECOMMENDATION	Tests drawn from 'SHOULD' statements in the respective standard
■ EXTRA	Criteria not defined in the IVOA 'Service Validation' wiki



Top 5 ERRORS/ REQUIREMENTS of TAP Validator

1. **E_QERR**: It's a catch-all code for unexpected query failures. The reasons varies and it requires specific approach.
2. **E_KEYX**: These look like they are referring to features from a future (not yet standardised) version of ADQL, TAPRegExt, or possibly TAP.
3. **E_CRSV**: Most of the errors are on TAP_SCHEMA where are defined columns with reserved word. A simple solution could be to use double quotes...
4. **E_CTYP**: Is related to type mismatch. There are some minor mismatch (DOUBLE PRECISION != double, character varying(64) != char, integer != int) and some major mismatch (DATE != char, double != char...)
5. **E_CUCD**: The error are related to Wrong UCD in ObsCore

Next release (after v3.1-6) will downgrade this to Warning.

The type system is not well-defined in TAP 1.0

This problem was addressed by ObsCore Erratum #1, passed 05/2019

Next release (after v3.1-6) will contain this update.

Potential actions to be taken:

- 1. Update the Standard:** need to check if all warnings always failing are covered in TAP 1.1 PR
- 2. Improve the validator:** The next version (after v3.1-6) will contain many updates.
- 3. Improve the services:**
 - a. Need to do more fine grained analysis of many errors returned
 - b. Contact TAP service providers for them to improve their service

Conclusions



1. Still some work to be done to improve the Euro-VO Registry Validators
2. Need to discuss with DAL WG to determine if some of the DAL standards should be corrected with some Errata
3. Need to start contacting publishers of VOResources for them to improve their service compliancy

THANK YOU!