

Euro-VO Resources Validation Status

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IVOA interop, College Park, MD, USA, 08/11/2018

Issue/Revision: 1.0

Reference: VO Service Compliance Statistics

Status: Issued

ESA UNCLASSIFIED - Releasable to the Public




Welcome to the new 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 (click on the  icon).




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 (click on the  icon; requires an account: click to join).



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 (click on the  icon to find more information).

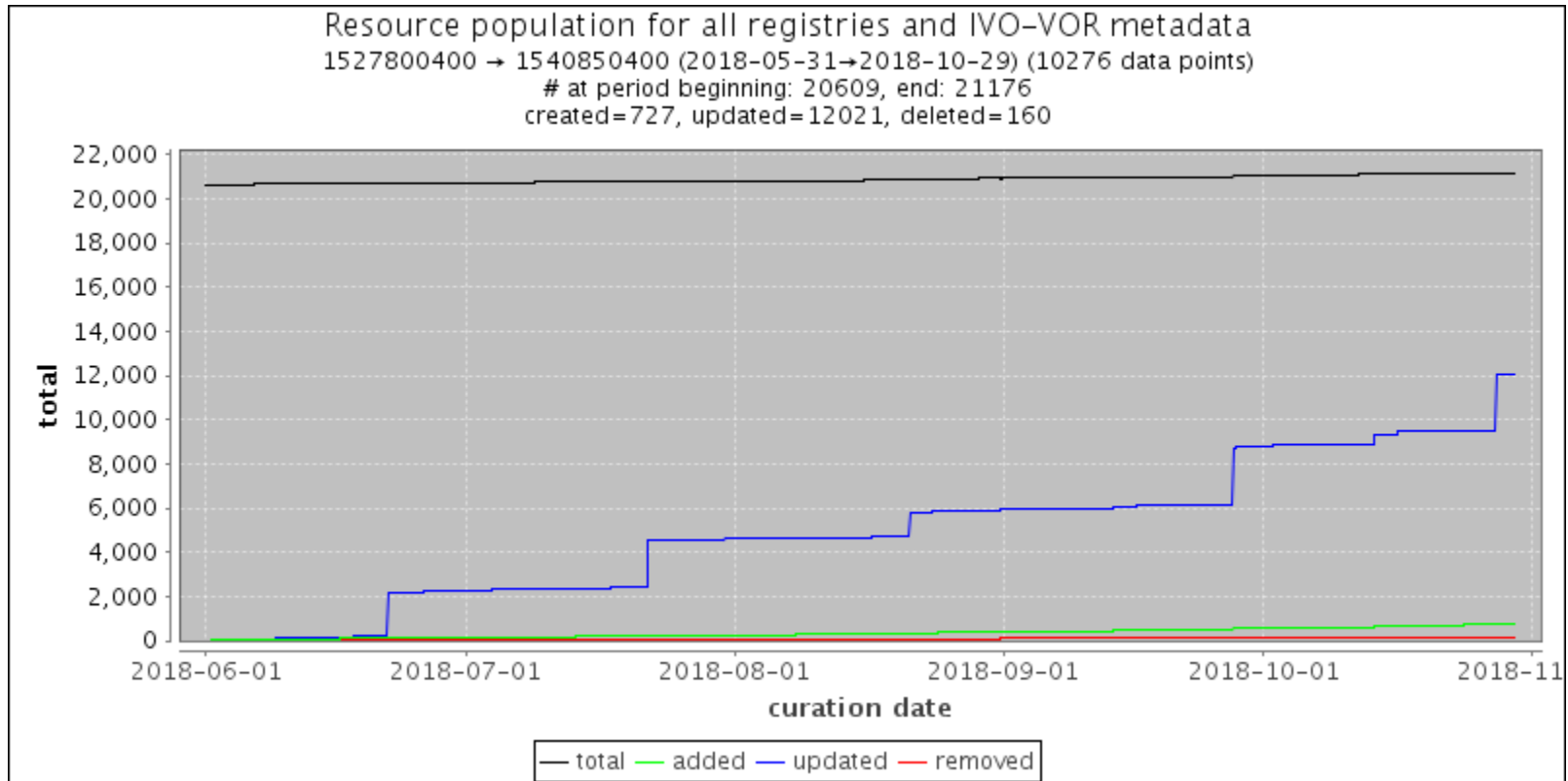


If you have any question regarding the EURO-VO Registry, please send an email to:

esavo.registry@sciops.esa.int.



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

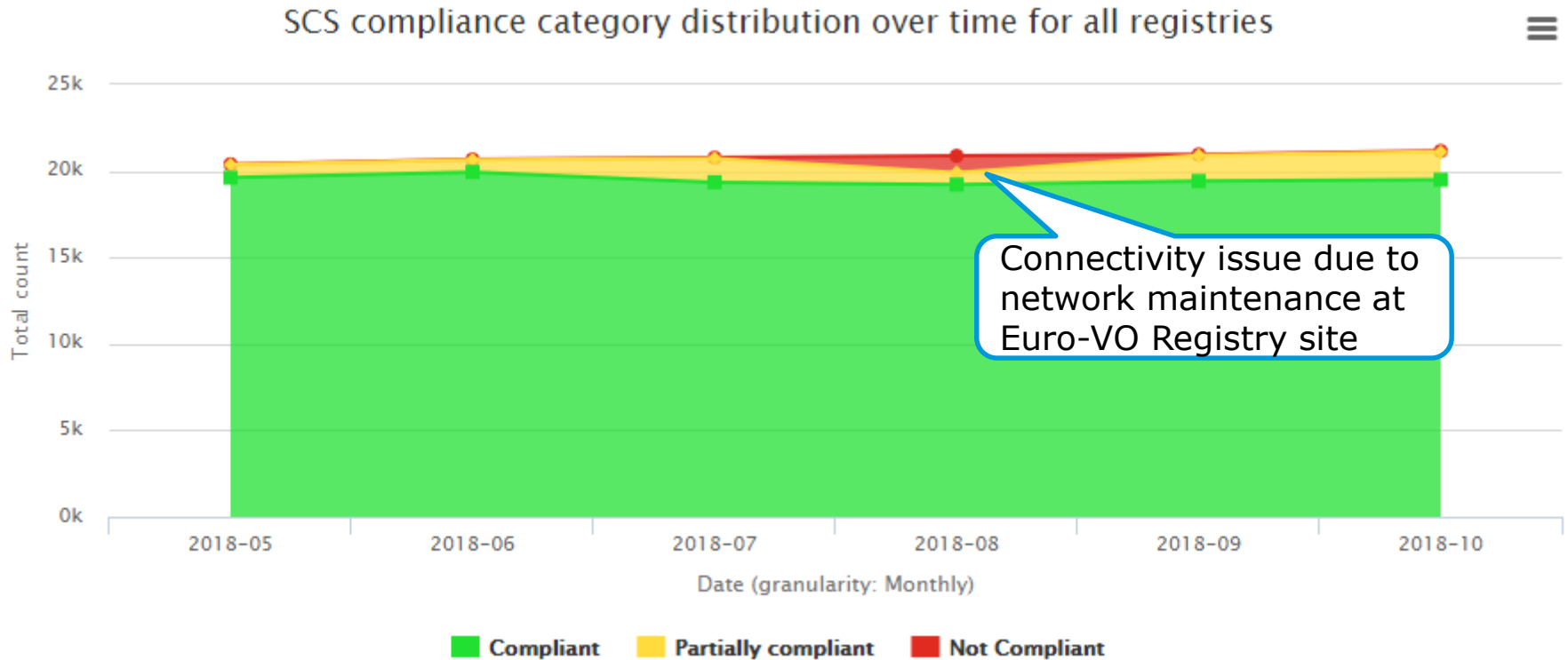
- **partially compliant** (some (but not all) requirements fail)

- 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

SCS Services Compliance – all registries



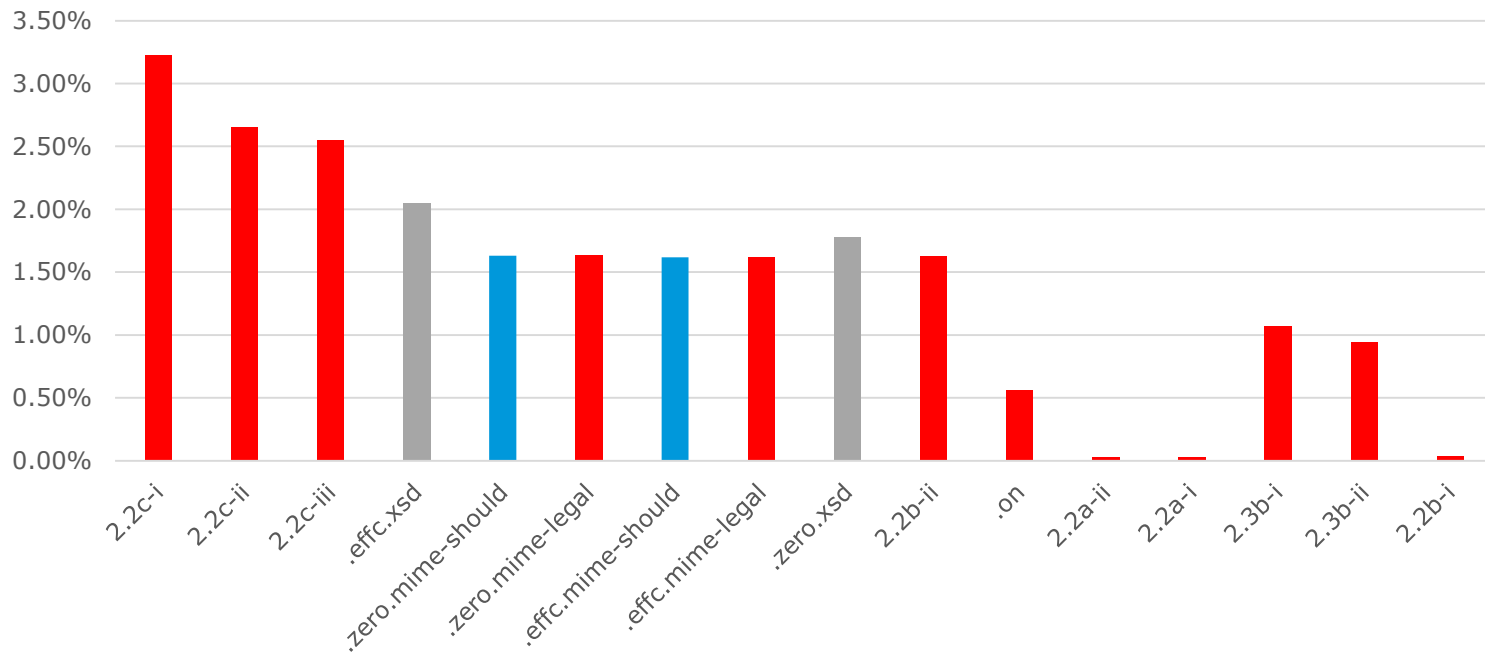
Most of the services are compliant...



SCS Services Validation Analysis



Validation criteria failed for SCS Services (October 2018)



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
.effc.xsd	EXTRA	The effective response is XSD-valid XML
.zero.mime-should	RECOMMENDATION	The MIME type of the zero response has the recommended value ('text/xml')
.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')
.effc.mime-should	RECOMMENDATION	The MIME type of the effective 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')
.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
2.2a-ii	REQUIREMENT	The service must respond with an XML document in the VOTable format [for the effective URL]
2.2a-i	REQUIREMENT	The service must respond with an XML document in the VOTable format [for the zero URL]
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

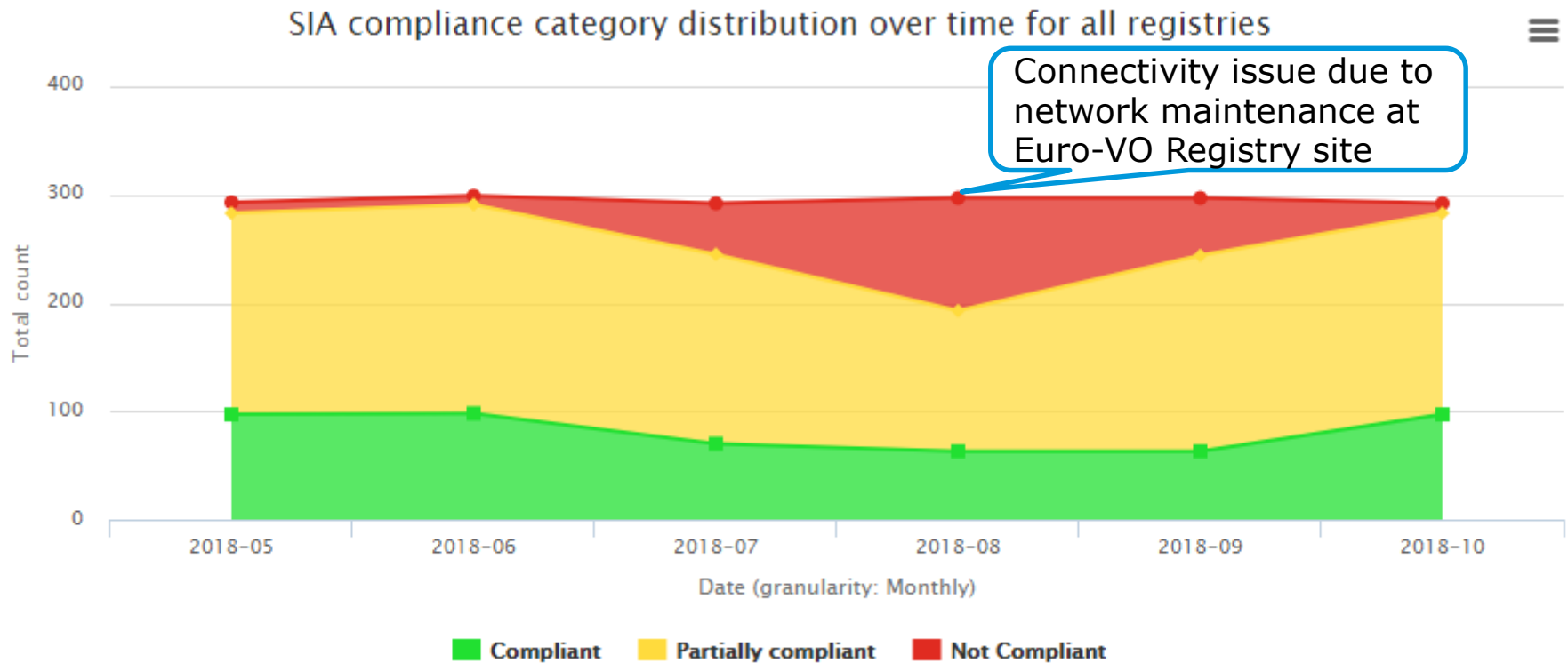
SCS Services Validation Analysis



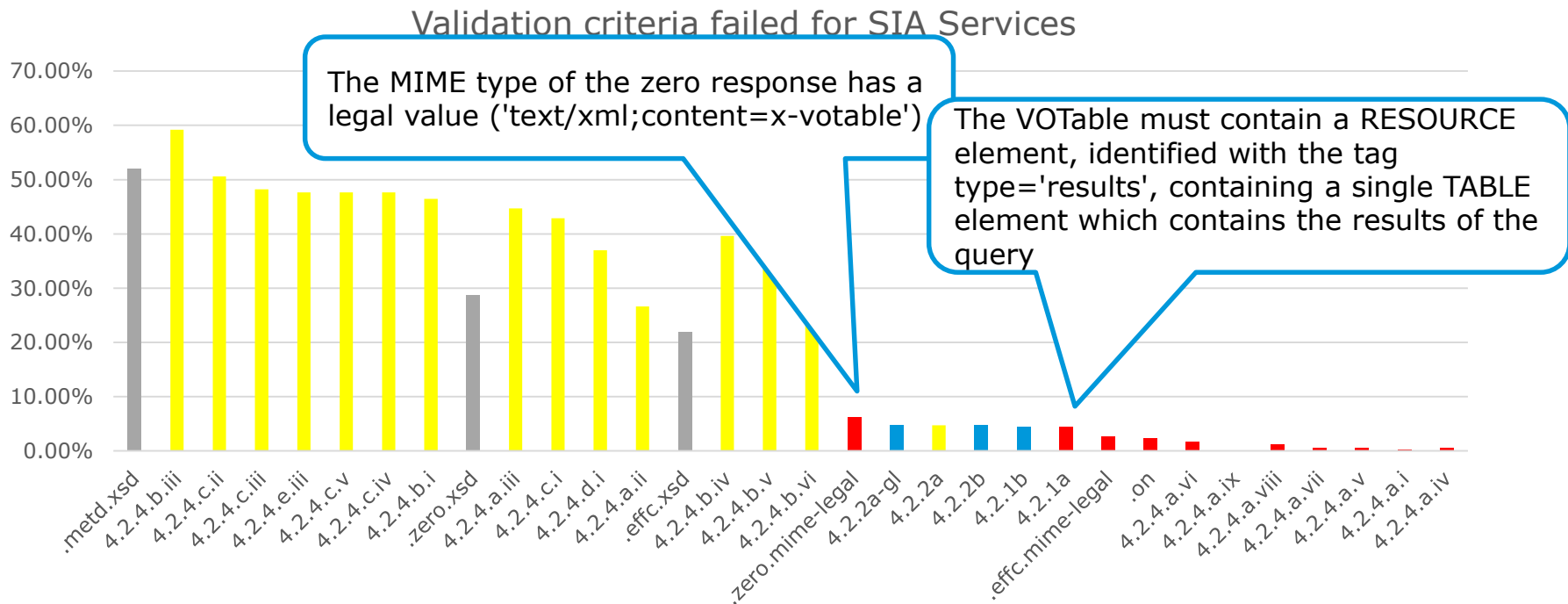
Actions to be taken:

- 1. Improve the Standard:** not needed any longer
- 2. Improve the validator:** Fix SSL issues (in progress).
- 3. Improve the services:** Contact with the low Compliance Category services and report findings...

SIA Services Compliance – all registries



SIA 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



SIA Services Validation Analysis



VAL_CODE	CRITERION_TYPE	DESCRIPTION
.METD.XSD	EXTRA	The metadata response is XSD-valid XML
4.2.4.B.III	WARNING	Exactly one field should have ucd='VOX:WCS_CoordProjection', with datatype='char', and arraysize='*'
4.2.4.C.II	WARNING	Exactly one field should have ucd='VOX:WCS_CoordRefPixel', with datatype='double', and arraysize='*'
4.2.4.C.III	WARNING	Exactly one field should have ucd='VOX:WCS_CoordRefValue', with datatype='double', and arraysize='*'
4.2.4.E.III	WARNING	Exactly one field should have ucd='VOX:WCS_CDMMatrix', with datatype='double', and arraysize='*'
4.2.4.C.V	WARNING	Exactly one field should have ucd='VOX:Image_MJDateObs', with datatype='double'
4.2.4.C.IV	WARNING	Exactly one field should have ucd='VOX:BandPass_ID', with datatype='char', and arraysize='*'
4.2.4.B.I	WARNING	Exactly one field should have ucd='VOX:Image_PixFlags', with datatype='char', and arraysize='*'
.ZERO.XSD	EXTRA	The zero response is XSD-valid XML
4.2.4.A.III	WARNING	Exactly one field should have ucd='INST_ID', with datatype='char', and arraysize='*'
4.2.4.C.I	WARNING	Exactly one field should have ucd='VOX:Image_MJDateObs', with datatype='double'
4.2.4.D.I	WARNING	Exactly one field should have ucd='VOX:BandPass_ID', with datatype='char', and arraysize='*'
4.2.4.A.II	WARNING	Exactly one field should have ucd='INST_ID', with datatype='char', and arraysize='*'
.EFFC.XSD	EXTRA	The effective response is XSD-valid XML
4.2.4.B.IV	WARNING	Exactly one field should have ucd='VOX:WCS_CoordRefPixel', with datatype='double', and arraysize='*'
4.2.4.B.V	WARNING	Exactly one field should have ucd='VOX:WCS_CoordRefValue', with datatype='double', and arraysize='*'
4.2.4.B.VI	WARNING	Exactly one field should have ucd='VOX:WCS_CDMMatrix', with datatype='double', and arraysize='*'
.ZERO.MIME-LEGAL	REQUIREMENT	The MIME type of the zero response has a legal value ('text/xml;content=x-votable')

But there are also ~15% of the services that could not be tested due to no data found. (next slides)

...

URL: <http://www.ivoa.net/documents/latest/SIA.html>



Issues 1/2: Wrong structure in VOTABLE



```
<DATA>  
<TABLEDATA>
```



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

Suggested solutions:

- Change the service response structure?
- Change the VOTable standard to support both versions?

Issues 2/2: SIAv1 vs SIAv2 both versions are used



Version incompatibility on input parameters (The SIZE is removed on SIAv2):

The SIZE parameter:

- a. For some is reported as error (SIAv2)
https://casda.csiro.au/casda_vo_tools/sia2/query?POS=0.0,0.0&SIZE=10.000
- b. For some is optional?
<http://archive.stsci.edu/siap/search.php?id=borg&POS=0.0,0.0>
- c. For some is mandatory (SIAv1)
<http://archives.esac.esa.int/hsa/aio/jsp/siap.jsp?POS=0.0,0.0&SIZE=0.200>

Suggested solutions:

1. Validate only the v1?
2. Ask for the services to be updated on v2 and update also the validator?

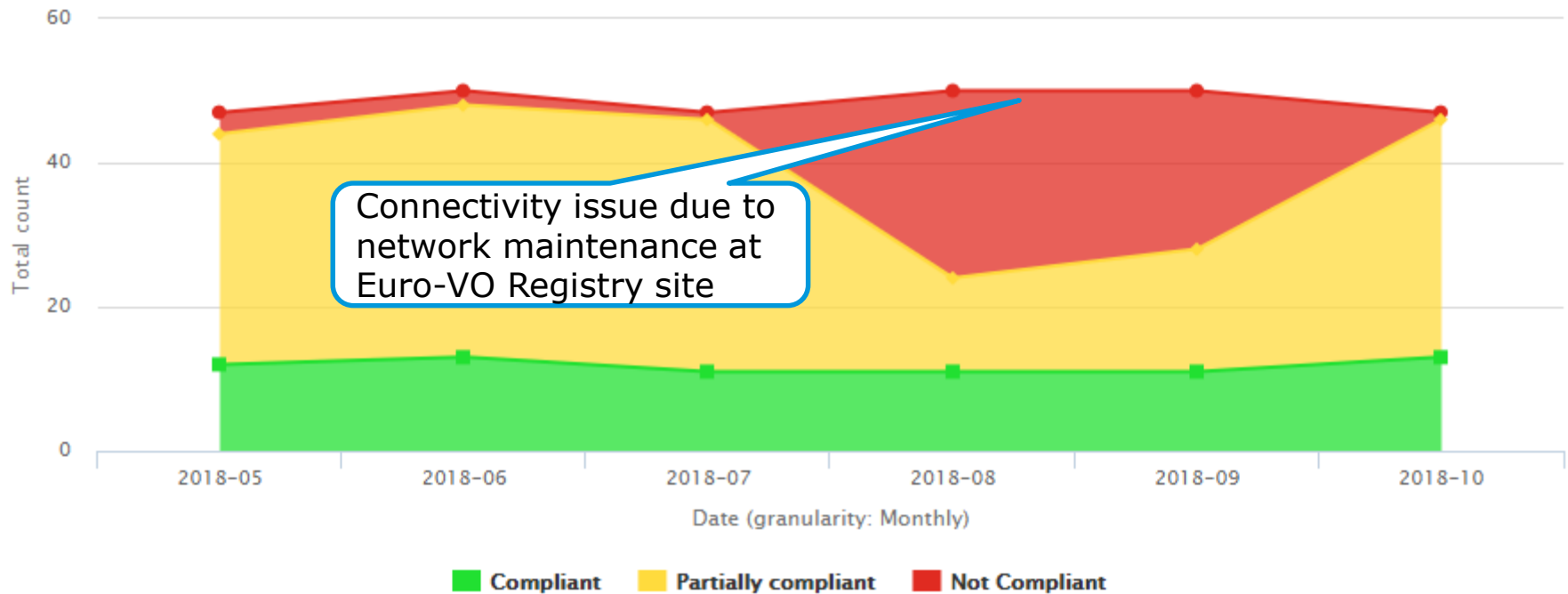
Actions to be taken:

1. **Improve the standard:** erratum for all the 4.2.4.* warnings ?
2. **Improve the validator:**
 - a. Update the validator for SIA v2 (some parameters like SIZE dose not exist on v2)
 - b. Improve the search algorithm for validation test data, adapt test query params based on limits defined by the service itself.
3. **Improve the services:**
 - a) Wrong structure in VOTABLE
 - b) Some services are XSD invalid (most common problem the missing `xsi:type="vs:ParamHTTP"`)
 - c) Contact with the low Compliance Category services and report findings.

SSAP Services Compliance – all registries



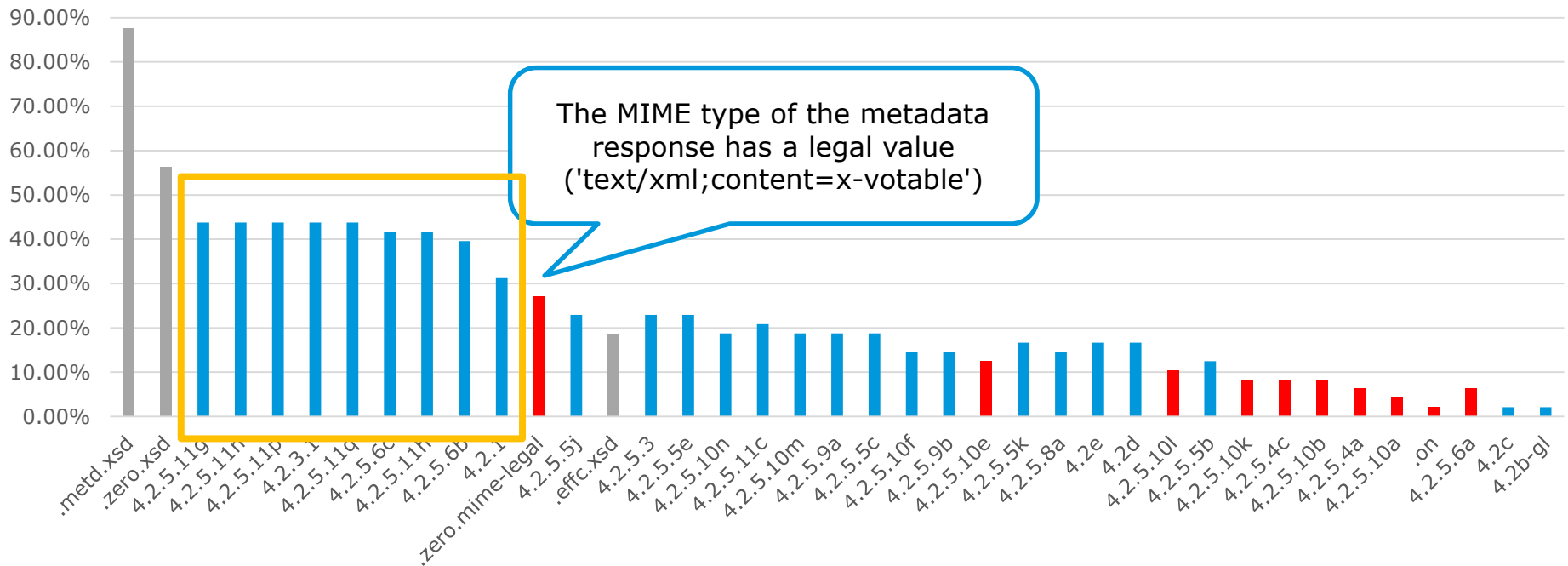
SSA compliance category distribution over time for all registries



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	CRITERION_TYPE	DESCRIPTION
.METD.XSD	EXTRA	The metadata response is XSD-valid XML
.ZERO.XSD	EXTRA	The zero response is XSD-valid XML
4.2.5.11G	RECOMMENDATION	Char.SpectralAxis.Calibration Type of coord calibration REC
4.2.5.11N	RECOMMENDATION	Char.SpatialAxis.Accuracy.StatError Astrometric statistical error REC
4.2.5.11P	RECOMMENDATION	Char.SpatialAxis.Calibration Type of coord calibration REC
4.2.3.1	RECOMMENDATION	Query.Score Degree of match to query params REC
4.2.5.11Q	RECOMMENDATION	Char.SpatialAxis.Resolution Spatial resolution of data REC
4.2.5.6C	RECOMMENDATION	Curation.PublisherDID Publisher's ID for the dataset REC
4.2.5.11H	RECOMMENDATION	Char.SpectralAxis.Resolution Spectral resolution FWHM REC
4.2.5.6B	RECOMMENDATION	Curation.Reference URL or Bibcode for documentation REC
4.2.1	RECOMMENDATION	UTYPEs of standard fields are required for identification of interface elements and must be given
.ZERO.MIME-LEGAL	REQUIREMENT	The MIME type of the zero response has a legal value ('text/xml;content=x-votable')
4.2.5.5J	RECOMMENDATION	DataID.DataSource Original source of data REC
.EFFC.XSD	EXTRA	The effective response is XSD-valid XML
4.2.5.3	RECOMMENDATION	Access.Size Estimated (not actual) dataset size REC
4.2.5.5E	RECOMMENDATION	DataID.CreatorDID Creator assigned dataset identifier REC
4.2.5.10N	RECOMMENDATION	Char.SpectralAxis.Coverage.Bounds.Stop Stop in spectral coordinate REC
4.2.5.11C	RECOMMENDATION	Char.FluxAxis.Calibration Type of flux calibration REC
4.2.5.10M	RECOMMENDATION	Char.SpectralAxis.Coverage.Bounds.Start Start in spectral coordinate REC
4.2.5.9A	RECOMMENDATION	Char.FluxAxis.Ucd ucd for flux REC
4.2.5.5C	RECOMMENDATION	DataID.Collection IVOA Identifier of collection (string) REC
4.2.5.10F	RECOMMENDATION	Char.TimeAxis.Coverage.Bounds.Extent Total elapsed exposure time REC

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



Actions to be taken:

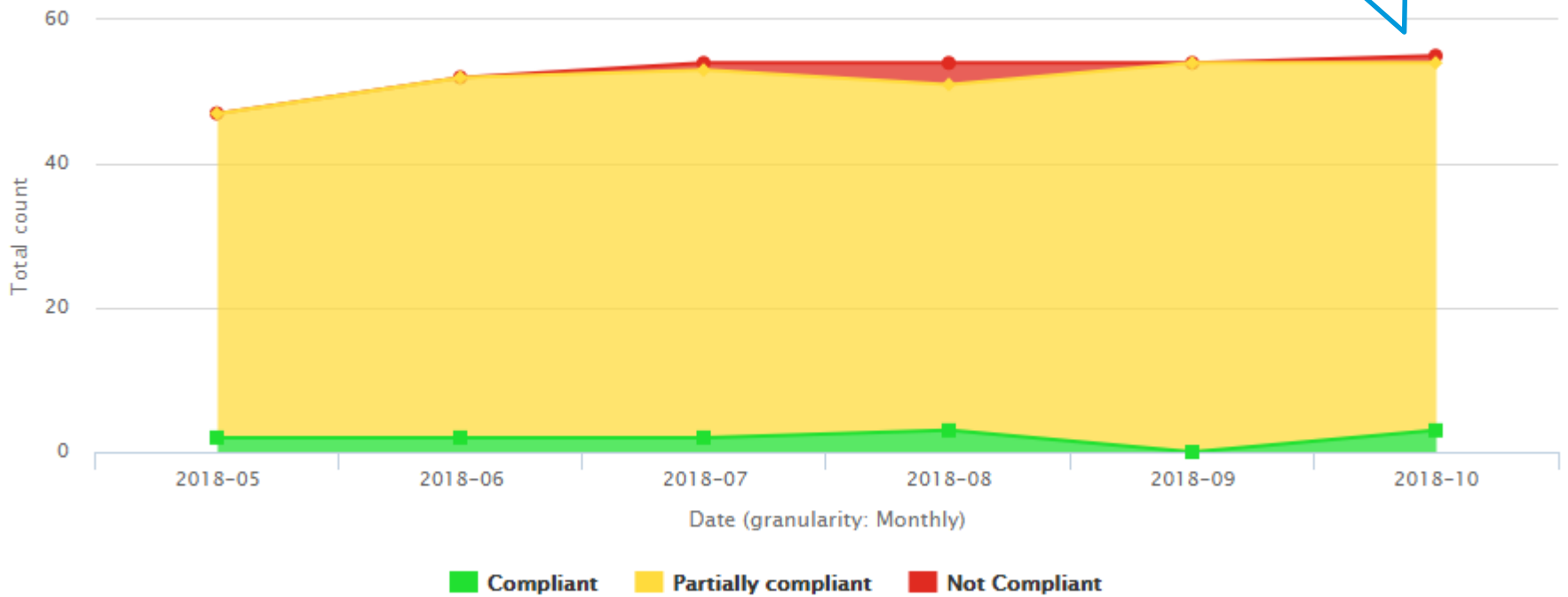
- 1. Reconsider the Standard:** Are the many REC (4.2.5.x) failures really important for the SSA services? They seem to fail for 40% of the services. Suggest an erratum?
- 2. Improve the validator:**
 - a. Improve the search algorithm for validation test data, adapt test query params based on limits defined by the service itself.
- 3. Improve the services:**
 - a) Wrong structure in VOTABLE
 - b) Some services are XSD invalid (most common problem the missing `xsi:type="vs:ParamHTTP"`)
 - c) Contact with the low Compliance Category services and report findings.

TAP Services Compliance – all registries



Validator updated using stilts v3.1-4 (new set of criteria)

TAP compliance category distribution over time for all registries

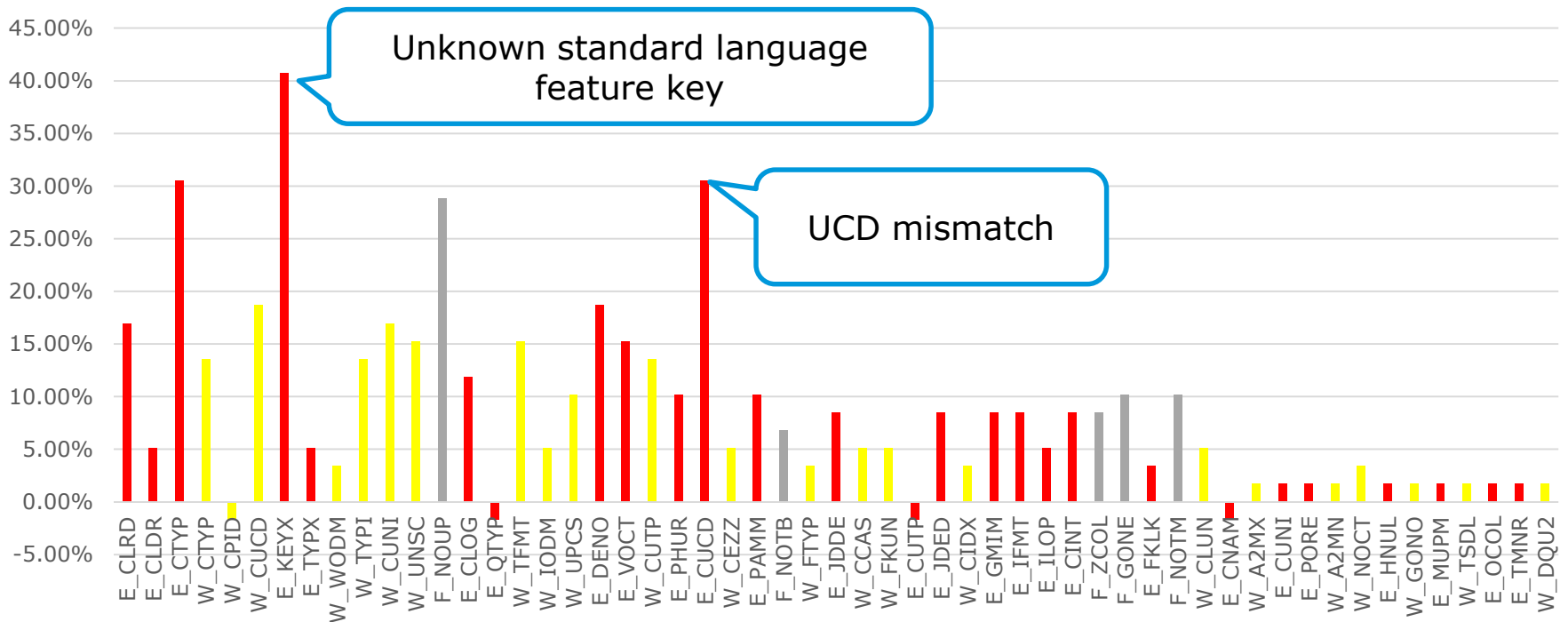


TAP Services Validation Analysis



Validation criteria failed for TAP Services

Development run



Unknown standard language feature key

UCD mismatch

Criterion Type	
name	description
■ REQUIREMENT	Tests drawn from 'MUST' statements in the respective standard
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TAP Services Validation Analysis



VAL_CODE	CRITERION_TYPE	DESCRIPTION
E_CLRD	REQUIREMENT	Unexpected columns in result
E_CLDR	REQUIREMENT	Declared columns absent in result
E_CTYP	REQUIREMENT	Declared/result type mismatch
W_CTYP	WARNING	Datatype mismatch
W_CPID	WARNING	Non-IdentifierURI dataModel
W_CUCD	WARNING	UCD mismatch
E_KEYX	REQUIREMENT	Unknown standard language feature key
E_TYPX	REQUIREMENT	ObsCore datatype incompatibility
W_WODM	WARNING	Incorrect ObsCore ID
W_TYPI	WARNING	ObsCore datatype mismatch
W_CUNI	WARNING	Unit mismatch
W_UNSC	WARNING	Foreign schema used in validation
F_NOUP	EXTRA	No upload methods listed
E_CLOG	REQUIREMENT	Non-boolean value
E_QTYP	REQUIREMENT	Query/result column type mismatch
W_TFMT	WARNING	Non-ISO-8601 result
W_IODM	WARNING	Incorrect ObsCore ID
W_UPCS	WARNING	Custom upload method
E_DENO	REQUIREMENT	Non-404 response for deleted job
E_VOCT	REQUIREMENT	Bad Content-Type for VOTable

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

TAP Services Validation Analysis



Actions to be taken:

1. **Reconsider the Standard:** need to check if covered in TAP 1.1 PR
2. **Improve the validator:** N/A
3. **Improve the services:**
 - a. Update to the latest RegTAP

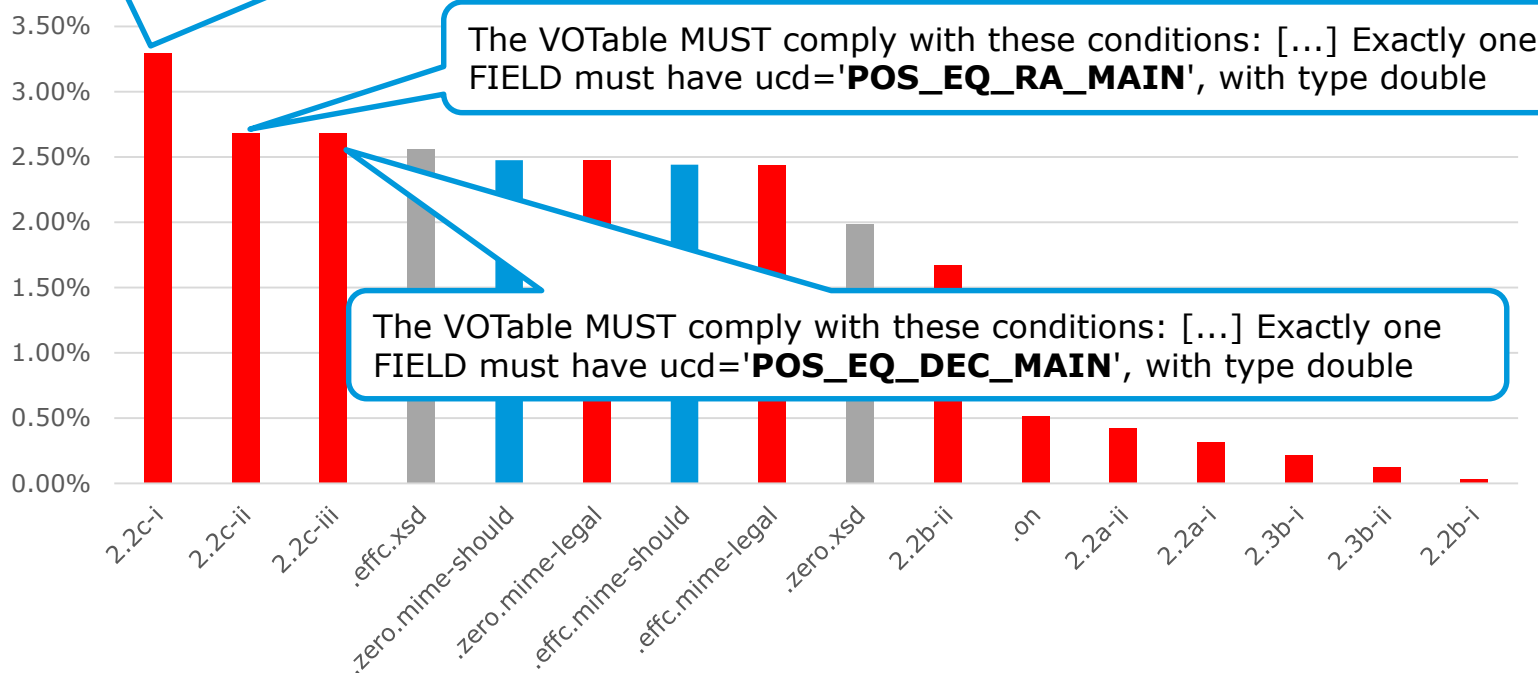
BACKUP SLIDES

SCS Services Validation Analysis (prior to Victoria interop)



The VOTable MUST comply with these conditions: [...] Exactly one FIELD must have ucd='ID_MAIN', with an array character type (fixed or variable length)

Validation criteria failed for SCS Services (May 2018)



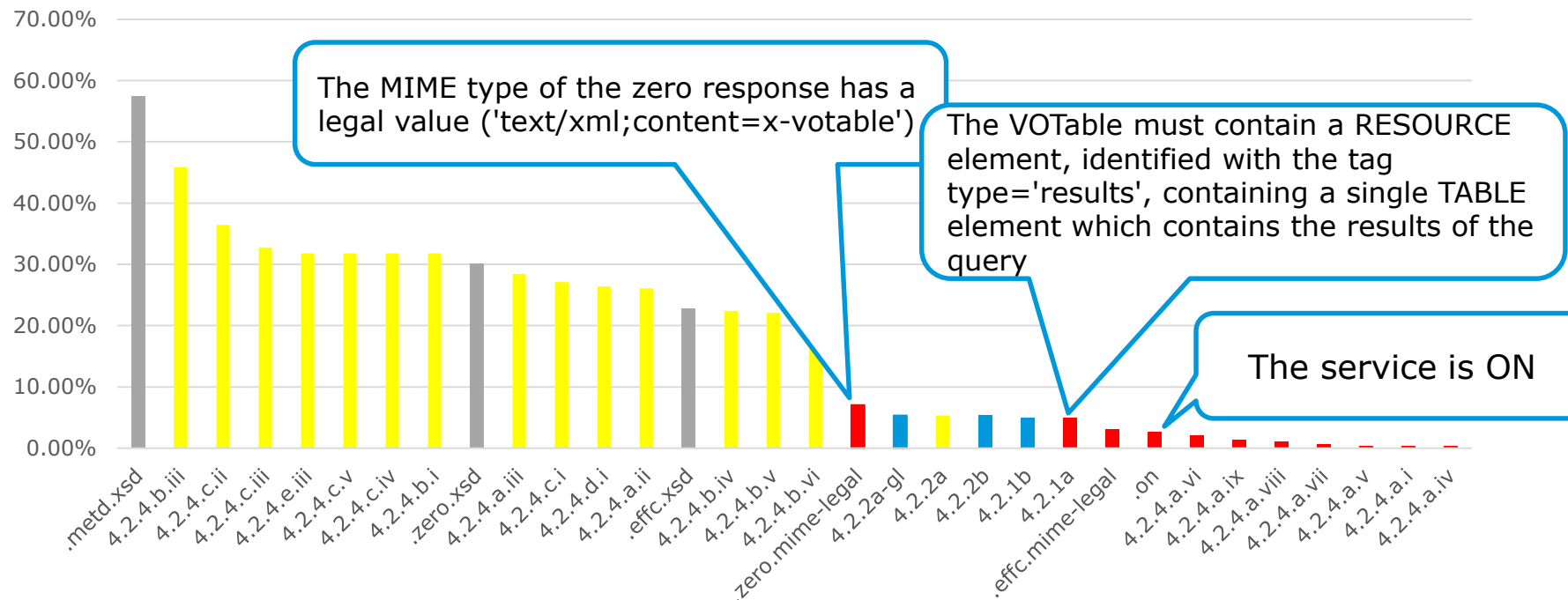
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SIA Services Validation Analysis (prior to Victoria interop)



Validation criteria failed for SIA Services



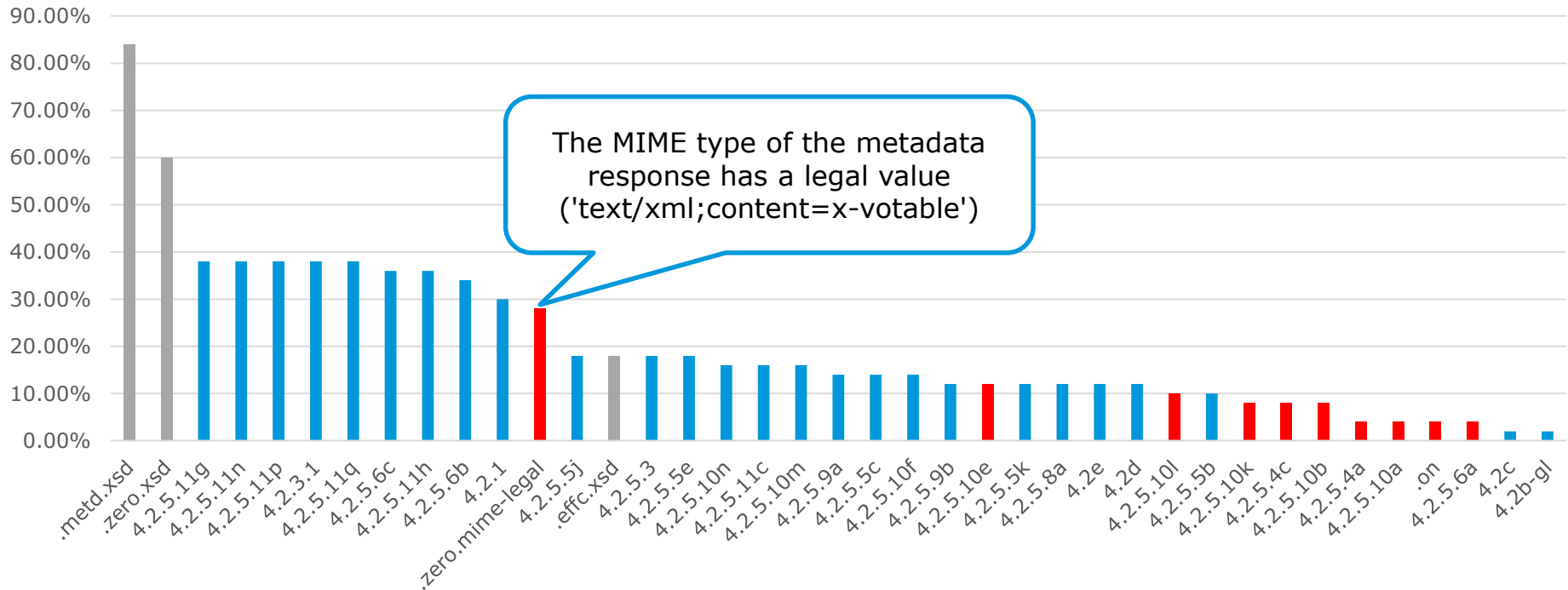
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SSA Services Validation Analysis (prior to Victoria interop)



Validation criteria failed for SSA Services



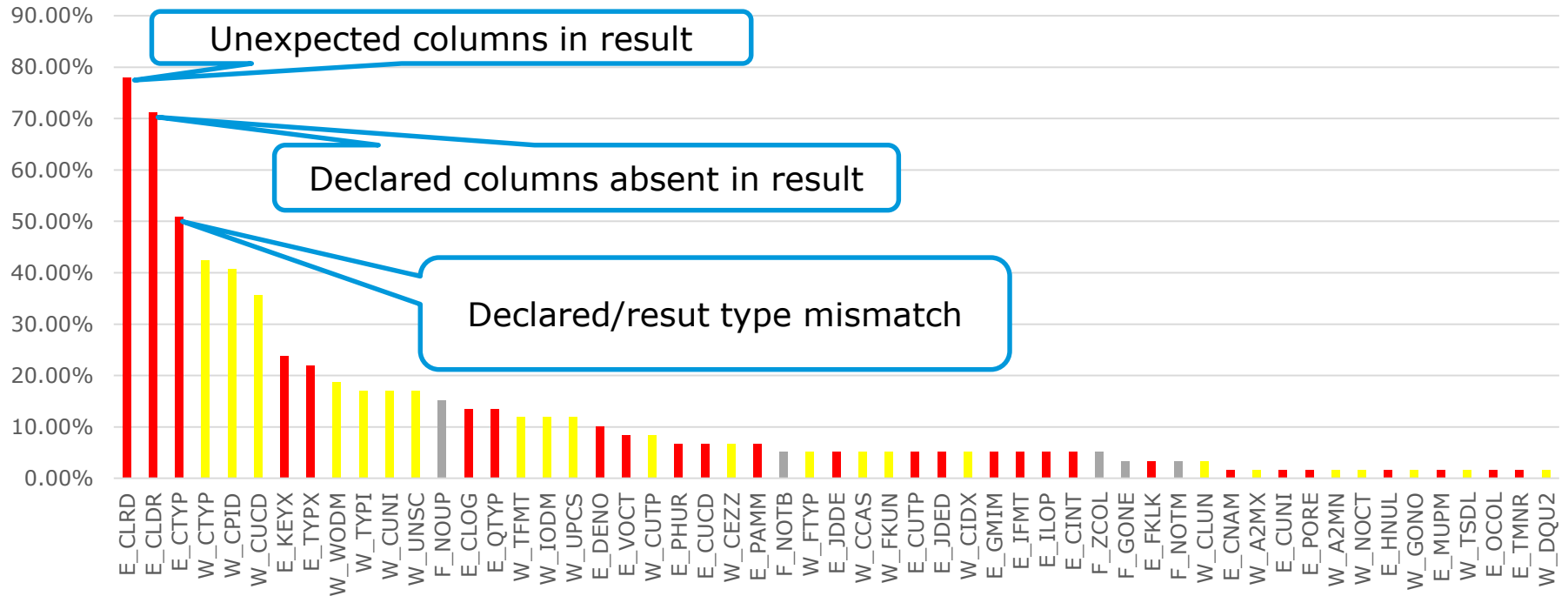
Criterion Type	
name	description
■ REQUIREMENT	Tests drawn from 'MUST' statements in the respective standard
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■ EXTRA	Criteria not defined in the IVOA 'Service Validation' wiki



TAP Services Validation Analysis (prior to Victoria interop)



Validation criteria failed for TAP 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



Criterion Type



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

Capability Type



Capability Type		
name	description	documenturl
cs:ConeSearch	Simple Cone Search	http://www.ivoa.net/documents/latest/ConeSearch.html
sia:SimpleImageAccess	Simple Image Access Specificatio	http://www.ivoa.net/documents/latest/SIA.html
ssa:SimpleSpectralAccess	Simple Spectral Access Protocol	http://www.ivoa.net/documents/SSA/
slap:SimpleLineAccess	Simple Line Access Protocol	http://www.ivoa.net/documents/SLAP/
tr:TableAccess	Table Access Protocol	http://www.ivoa.net/documents/TAP/

