

Improving the data access services in the VO ecosystem

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IVOA interoperability meeting, Ops Session, 15/11/2025

- <https://registry.euro-vo.org>
- New validator for Object Observability Simple Access Protocol services
- Reach the team at: esavo.registry@cosmos.esa.int

Reaching out to Data Providers

- Investigated issues for TAP, SIA1, SIA2, SSA, SCS (October, 2025)
- 54 data providers contacted
- 53 have responded so far!
- Services
 - 88 TAP,
 - 26 SSA,
 - 81 SIA1,
 - 5 SIA2,
 - 1546 SCS (~1400 from VizieR and IRSA)
- Total 1746 Services

Reaching out to Data Providers

- The owners of 100% of the faulty SIA1, SIA2, and SSA services have been contacted.
98% of the faulty SCS services (25 not analyzed & contacted),
84% of the faulty TAP services (17 not analyzed & contacted)
- Data providers have committed to fixing almost all issues

The remaining issues	Will fix / Already fixed	No answer yet	Will not get fixed
SCS	1540	3 (fs.usno)	3
SIA1	81	0	0
SIA2	5	0	0
SSA	26	0	0
TAP	88	0	0

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

Not compliant (all requirements fail)

- D all requirements 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

- Catastrophic failures – 404, Crashing, Errors, etc
 - 45 SCS
 - 29 SIA1
 - 0 SIA2
 - 3 SSA
 - 9 TAP
- The rest of the issues are less severe.
For example, missing/incorrect UCDs, missing columns, returning data in JSON instead of VOTable
- Euro-VO Registry Validator
- SSL Certificate issues

- “Thanks a lot for reporting and for checking our services! This is incredibly useful”
 - “I believe that service is no longer active”
 - “It was a long time ago I had to do anything with the VO service...”
 - “If you guide me through this upgrade and it is easily done, I would be happy to help”
 - “Thanks for the report! We’ll try to address as many of these as we can”
-
- Who have we failed to contact?
 - United States Naval Observatory

Euro-VO Registry own validators for protocols:

- Simple Cone Search (SCS) v1.03
- Simple Image Search (SIA) v1.0 & v2.0
- Simple Spectral Access (SSA) v1.1

Euro-VO Registry external validators

- Table Access Protocol (TAP) v1.0 & v1.1 using taplint (STILTS)
- Multi-Order Coverage map (MOC) v1.0, v1.1 & 2.0 using CDS's MOC validator

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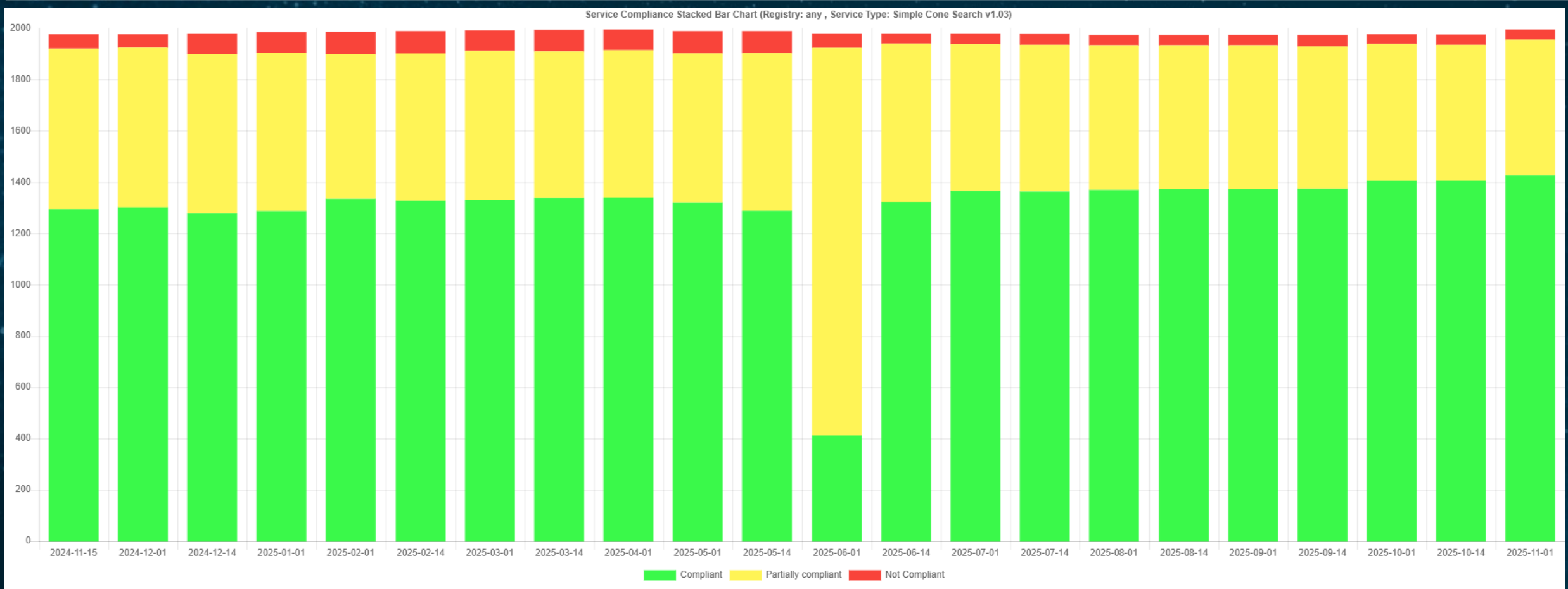
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SCS – Simple Cone Search – Without VizierR

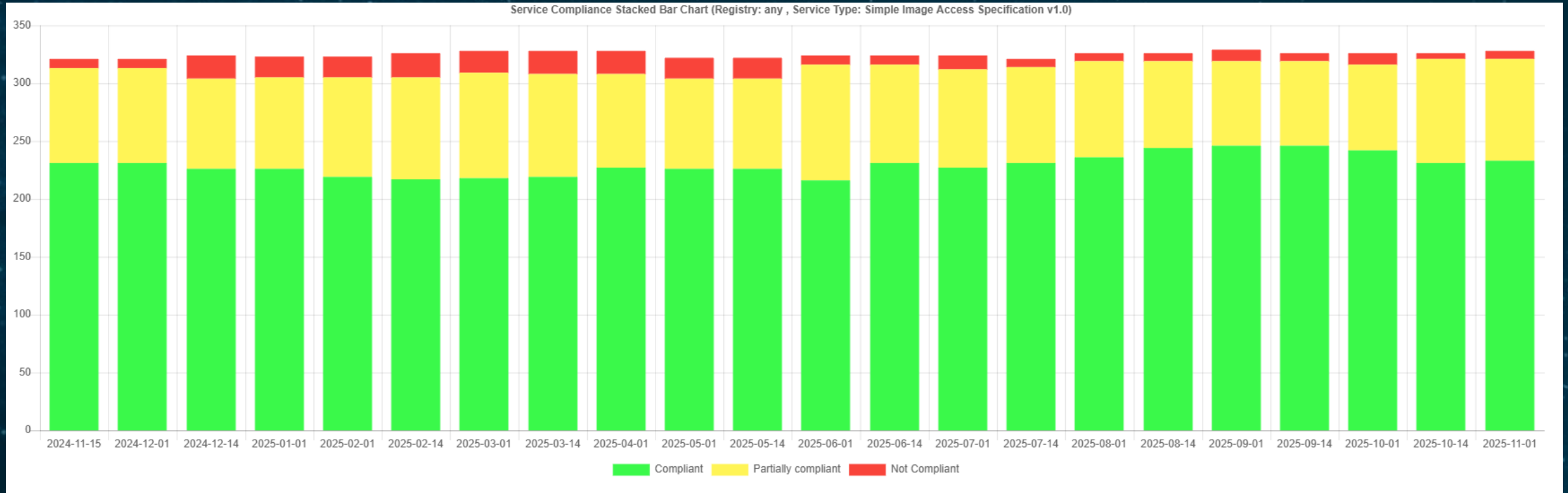


- Missing or multiple columns with main ID (UCD = ID_MAIN or meta.id;meta.main)
- Does SCS allow for the return of data when the Radius is zero? <https://github.com/ivoa-std/ConeSearch/issues/43>

SCS – Simple Cone Search - VizieR

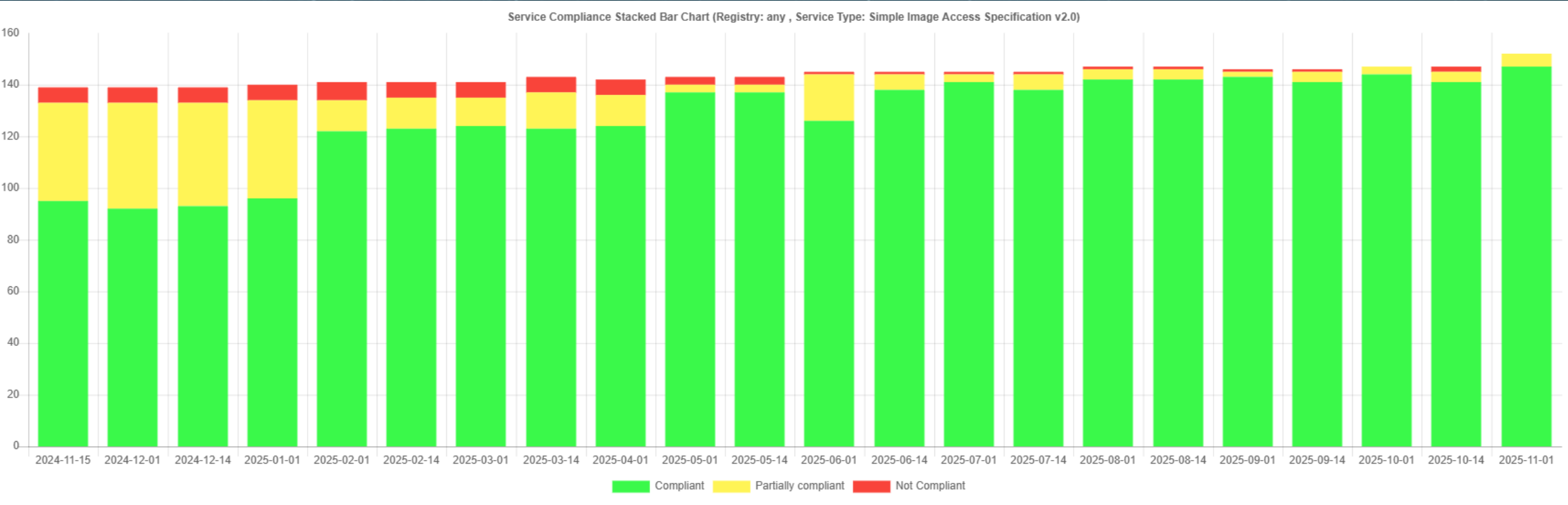


SIA1 – Simple Image Access Protocol v1.0



- Missing fields with UCDs VOX:Image_Naxes, VOX:Image_Naxis, VOX:Image_Scale
- No <testQuery> declaration (https://ivoa.net/documents/SimpleDALRegExt/20220222/REC-SimpleDALRegExt-1.2.html#tth_sEc3.2.5)

SIA2 – Simple Image Access Protocol v2.0



● All issues are solved! (or will be shortly)

SSA – Simple Spectra Access Protocol v1.1



- Missing utypes dataset.datamodel, dataset.length, curation.publisher, coverage (like char.spatialaxis.coverage.bounds.extent, char.timeaxis.coverage.location.value, char.spectralaxis.coverage.location.value)



- UCD and/or utype mismatch between tap_schema, /tables, and result
- Table in tap_schema no longer exists
- ADQL reserved words should be delimited (using “”)

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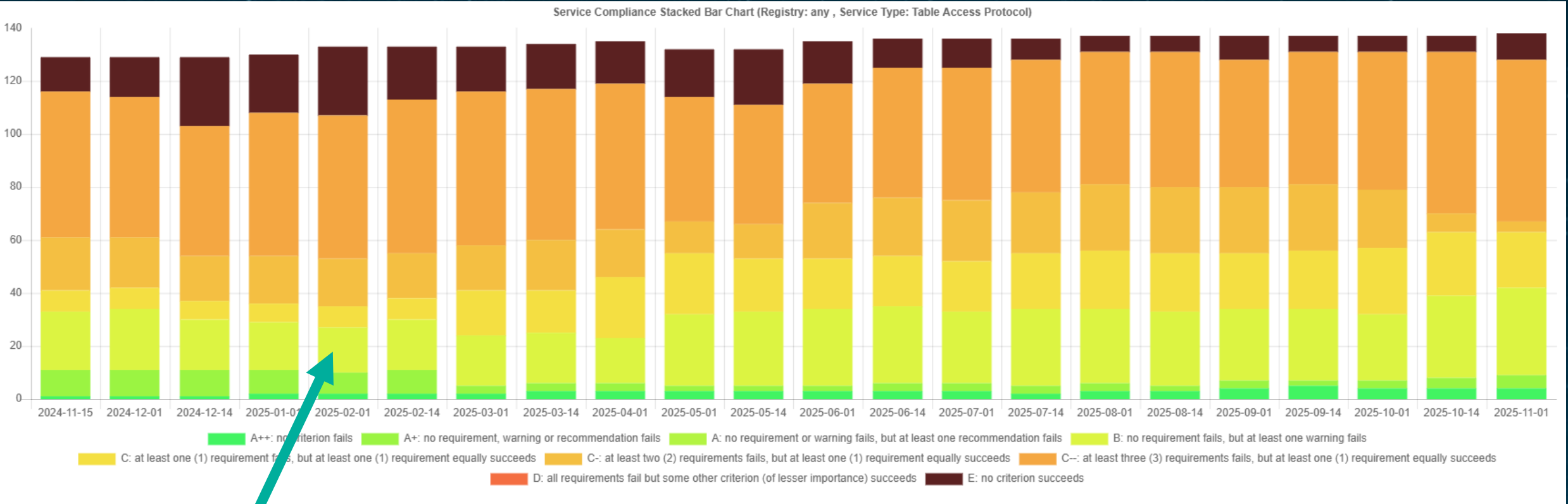
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TAP Compliance - Gradient



Started to investigate compliance issues

Requirement failures	January	June	November
Table Access Protocol 1.0	2426	1404	682
Table Access Protocol 1.1	1360	935	532

- Most of the detected issues will get fixed
- The trend is clear
- If you are experiencing issues registering a resource or improving the compliance of your resource, please let us know, and we'll be happy to assist you
- Reach the team at: esavo.registry@cosmos.esa.int

Failing requirements	January	June	November
Simple Cone Search	2076	2034	1833
Simple Image Access 1	139	124	108
Simple Image Access 2	23	12	2
Simple Spectral Access	105	76	61
Table Access Protocol 1.0	2426	1404	682
Table Access Protocol 1.1	1360	935	532