

# DataLink Implementation Feedback

Mark Taylor (Bristol)

IVOA Interop  
Victoria

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# Outline

## Implementation feedback relating to DataLink

- DataLink document
- Service Descriptor context
- Service Descriptor content
- Service Descriptor positioning
- Row Correspondance
- DataLink usage patterns

## Context:

- New DataLink-related functionality in TOPCAT
- See talk in Apps II

The screenshot shows the TOPCAT(1): DataLink View window. It contains a table with the following data:

ID	access_url	service_def
6	ivo://org.gavo.dc/~?califa...	procsvc0
7	ivo://org.gavo.dc/~?califa...	procsvc1
8	ivo://org.gavo.dc/~?califa...	procsvc2
9	ivo://org.gavo.dc/~?califa... http://dc.zah.uni-heidelb...	
10	ivo://org.gavo.dc/~?califa... http://dc.zah.uni-heidelb...	
11	ivo://org.gavo.dc/~?califa... http://dc.zah.uni-heidelb...	
12	ivo://org.gavo.dc/~?califa... http://dc.zah.uni-heidelb...	
13	not-a-real-identifier	NotFc

Below the table, the 'Row Link Type' is 'Fixed Access URL'. The 'Row Detail' section shows the following information:

- access\_url:** http://dc.zah.uni-heidelberg.de/getproduct/califa/datadr3/COMB/
- content\_type:** image/jpeg
- content\_length:**
- description:** A preview for the dataset.
- semantics:** #preview
- URL:** http://dc.zah.uni-heidelberg.de/getproduct/califa/datadr3/COMB/ARP220.CC

The 'URL' section includes a checkbox for 'Type: IMAGE' and an 'Action: View image internally' button, along with an 'Invoke' button.

- DataLink document
  - Had to read it lots of times
  - Talks about distinct things:
    - ▷ {Links} service
    - ▷ {Links}-response format VOTable
    - ▷ Service Descriptor VOTable RESOURCE elements
  - One way of putting these together is discussed in the document
  - But they can be used in other ways (e.g. standalone SDs), seem to be less carefully thought through

# Service Descriptor Context

- Service Descriptors come in two different contexts:
  - *Either* referenced by {links}-response document  
*or* standalone in any old VOTable
  - These two contexts work differently:
    - ▷ Standalone SDs apply implicitly to every table row
    - ▷ {links}-document SDs apply only to rows that reference them explicitly
  - This complicates VOTable processing
    - ▷ need to check specifically if document looks like a {links} response to work out how to treat SDs
  - See [Datalink service descriptor usage](#) DAL thread

# Service Descriptor Content

- Service Descriptors don't have much standard metadata
  - Only `accessURL`, `standardID`, `resourceIdentifier` are discussed in REC-DataLink-1.0
  - Doesn't really matter for {links}response services, but for standalone SDs, there's not much for clients or users to go on
    - ▷ ... especially if there is more than one

```
<RESOURCE type="meta" utype="ad hoc:service">
```

```
  <PARAM name="accessURL" value="http://example.com/cone/query" .../>
```

```
  <PARAM name="standardID" value="ivo://ivoa.net/std/cone" .../>
```

```
  <PARAM name="resourceIdentifier" value="ivo://example.com/cone" .../>
```

```
  <GROUP name="inputParams">
```

```
    ...
```

```
  </GROUP>
```

```
</RESOURCE>
```

# Service Descriptor Content

- Service Descriptors don't have much standard metadata
  - Only `accessURL`, `standardID`, `resourceIdentifier` are discussed in REC-DataLink-1.0
  - Doesn't really matter for {links}response services, but for standalone SDs, there's not much for clients or users to go on
    - ▷ ... especially if there is more than one

```
<RESOURCE type="meta" utype="adhoc:service" name="Cone Search">
  <DESCRIPTION>Positional search</DESCRIPTION>
  <PARAM name="accessURL" value="http://example.com/cone/query" .../>
  <PARAM name="standardID" value="ivo://ivoa.net/std/cone" .../>
  <PARAM name="resourceIdentifier" value="ivo://example.com/cone" .../>
  <PARAM name="contentType" value="application/x-votable+xml" .../>
  <GROUP name="inputParams">
    ...
  </GROUP>
</RESOURCE>
```

- Suggested additions:
  - ▷ Use standard VOTable `name` attribute and `DESCRIPTION` element in DataLink SD examples
  - ▷ Define a new `contentType`-named PARAM

# Service Descriptor Positioning

Table & associated Service Descriptor(s) are in sibling RESOURCES

- Table has `type="results"`, SD has `type="meta"`
- Sequence is unspecified
  - ▷ Difficult when streaming VOTables: may want to know SDs up front
- No explicit rule for multi-table VOTable documents (*maybe out of scope for DataLink?*)
  - ▷ Difficult when serializing multiple tables with SD metadata (TOPCAT save session)
  - ▷ ... this may be a bit out of the scope of the DataLink document
  - ▷ How to do it?

```
<VOTABLE>
  <RESOURCE type="results"><TABLE name="table1"> ... </TABLE></RESOURCE>
  <RESOURCE type="meta"> ... service descriptor ... </RESOURCE>
  <RESOURCE type="results"><TABLE name="table2"> ... </TABLE></RESOURCE>
</VOTABLE>
```

→ whose is the service descriptor?

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  <RESOURCE>
    <RESOURCE type="results"><TABLE name="table1"> ... </TABLE></RESOURCE>
    <RESOURCE type="meta"> ... service descriptor ... </RESOURCE>
  </RESOURCE>
  <RESOURCE>
    <RESOURCE type="results"><TABLE name="table2"> ... </TABLE></RESOURCE>
  </RESOURCE>
</VOTABLE>
```

→ Aladin doesn't find the tables 😞



# Service Descriptor Positioning

Table & associated Service Descriptor(s) are in sibling RESOURCES

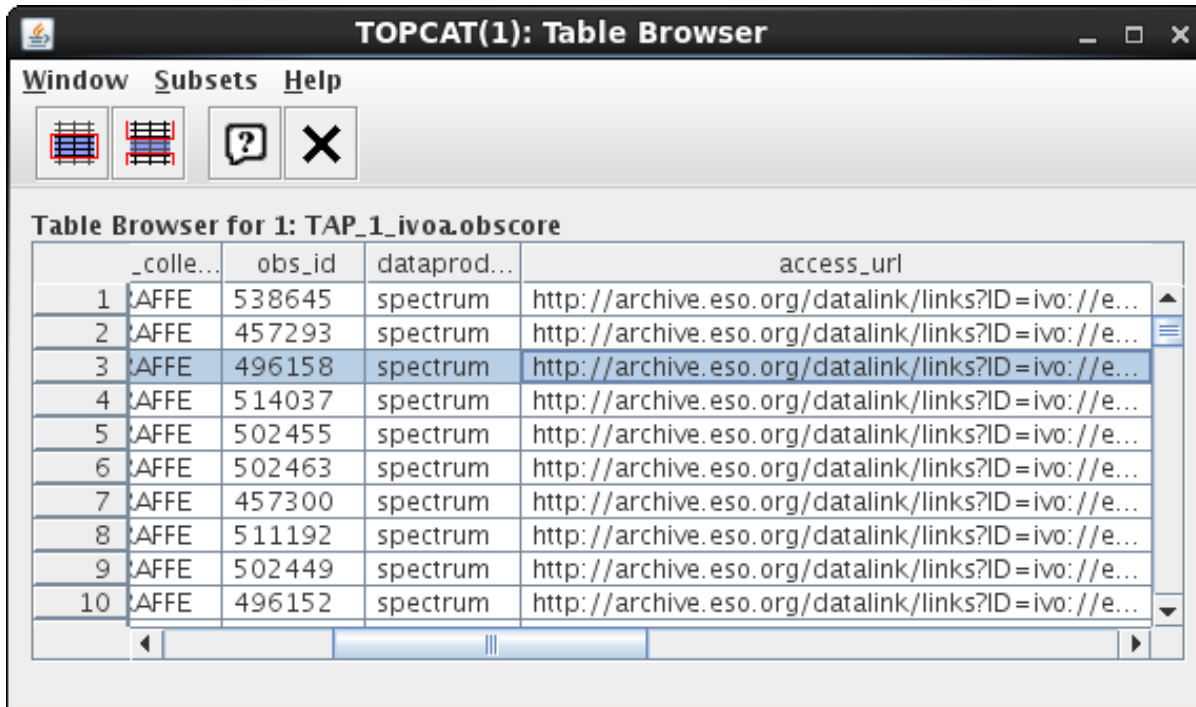
- Table has `type="results"`, SD has `type="meta"`
- Sequence is unspecified
  - ▷ Difficult when streaming VOTables: may want to know SDs up front
- No explicit rule for multi-table VOTable documents (*maybe out of scope for DataLink?*)
  - ▷ Difficult when serializing multiple tables with SD metadata (TOPCAT save session)
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  - ▷ How to do it?

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<VOTABLE>
  <RESOURCE>
    <TABLE name="table1"> ... </TABLE>
    <RESOURCE type="meta"> ... service descriptor ... </RESOURCE>
  </RESOURCE>
  <RESOURCE>
    <TABLE name="table2"> ... </TABLE>
  </RESOURCE>
</VOTABLE>
```

→ Current solution in TOPCAT — doesn't break anything

# Row Correspondance

- Would like to highlight “the same” row in related {links} tables



TOPCAT(1): Table Browser

Window Subsets Help

Table Browser for 1: TAP\_1\_ivoa.obscore

	_colle...	obs_id	dataprod...	access_url
1	AFFE	538645	spectrum	<a href="http://archive.eso.org/datalink/links?ID=ivo://e...">http://archive.eso.org/datalink/links?ID=ivo://e...</a>
2	AFFE	457293	spectrum	<a href="http://archive.eso.org/datalink/links?ID=ivo://e...">http://archive.eso.org/datalink/links?ID=ivo://e...</a>
3	AFFE	496158	spectrum	<a href="http://archive.eso.org/datalink/links?ID=ivo://e...">http://archive.eso.org/datalink/links?ID=ivo://e...</a>
4	AFFE	514037	spectrum	<a href="http://archive.eso.org/datalink/links?ID=ivo://e...">http://archive.eso.org/datalink/links?ID=ivo://e...</a>
5	AFFE	502455	spectrum	<a href="http://archive.eso.org/datalink/links?ID=ivo://e...">http://archive.eso.org/datalink/links?ID=ivo://e...</a>
6	AFFE	502463	spectrum	<a href="http://archive.eso.org/datalink/links?ID=ivo://e...">http://archive.eso.org/datalink/links?ID=ivo://e...</a>
7	AFFE	457300	spectrum	<a href="http://archive.eso.org/datalink/links?ID=ivo://e...">http://archive.eso.org/datalink/links?ID=ivo://e...</a>
8	AFFE	511192	spectrum	<a href="http://archive.eso.org/datalink/links?ID=ivo://e...">http://archive.eso.org/datalink/links?ID=ivo://e...</a>
9	AFFE	502449	spectrum	<a href="http://archive.eso.org/datalink/links?ID=ivo://e...">http://archive.eso.org/datalink/links?ID=ivo://e...</a>
10	AFFE	496152	spectrum	<a href="http://archive.eso.org/datalink/links?ID=ivo://e...">http://archive.eso.org/datalink/links?ID=ivo://e...</a>

# Row Correspondance

- Would like to highlight “the same” row in related {links} tables

The image shows two windows from the TOPCAT software. The left window, titled "TOPCAT(1): Table Browser", displays a table with columns for observation ID, data product, and URL. The right window, titled "TOPCAT(1): Activation - View Datalink Table", shows a detailed view of a specific data link, including its semantics, description, and access URL. The "View Datalink Table" window also includes a "Row Link Type" section, a "Row Detail" section with various metadata fields, and a "URL" section with a "Type" dropdown set to "FITS\_IMAGE", an "Action" dropdown set to "View image internally", and an "Invoke" button. The "Result" section shows "FAIL No responses".

**Table Browser for 1: TAP\_1\_ivoa.obscore**

	_colle...	obs_id	dataprod...	
1	AFFE	538645	spectrum	http://archive.eso.org/...
2	AFFE	457293	spectrum	http://archive.eso.org/...
3	AFFE	496158	spectrum	http://archive.eso.org/...
4	AFFE	514037	spectrum	http://archive.eso.org/...
5	AFFE	502455	spectrum	http://archive.eso.org/...
6	AFFE	502463	spectrum	http://archive.eso.org/...
7	AFFE	457300	spectrum	http://archive.eso.org/...
8	AFFE	511192	spectrum	http://archive.eso.org/...
9	AFFE	502449	spectrum	http://archive.eso.org/...
10	AFFE	496152	spectrum	http://archive.eso.org/...

**DataLink Table**

	semantics	description	eso_catego...
1	#this	Requested file	SCIENCE.SPECTRUM
2	#preview	PDF preview of the requested file	
3	#auxiliary	Ancillary file associated to the re...	ANCILLARY.MOSSPECT
4	#auxiliary	Ancillary file associated to the re...	ANCILLARY.MOSSPECT
5	#auxiliary	Ancillary file associated to the re...	ANCILLARY.MOSSPECT
6	#auxiliary	Ancillary file associated to the re...	ANCILLARY.PREVIEW
7	#progenitor	File used to generate the request...	
8	http://archive.eso.org/rdf/datali...	Release description of the collecti...	

**Row Link Type**  
Fixed Access URL

**Row Detail**

**access\_url:** http://archive.eso.org/datalink/links?ID=ivo://eso.org/ID?ADP.2015-04-13T10:11:05.923

**content\_type:** application/fits

**content\_length:** 69076

**description:** Ancillary file associated to the requested file

**semantics:** #auxiliary

**URL:** http://archive.eso.org/datalink/links?ID=ivo://eso.org/ID?ADP.2015-04-13T10:11:05.923

**Type:** FITS\_IMAGE **Action:** View image internally **Invoke**

**Result:** FAIL No responses

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**Table Browser for 1: TAP\_1\_ivoa.obscure**

	_colle...	obs_id	dataprod...	
1	AFFE	538645	spectrum	http://archive.eso.org/...
2	AFFE	457293	spectrum	http://archive.eso.org/...
3	AFFE	496158	spectrum	http://archive.eso.org/...
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**DataLink Table**

	semantics	description	eso_catego...
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6	#auxiliary	Ancillary file associated to the re...	ANCILLARY.PREVIEW
7	#progenitor	File used to generate the request...	
8	http://archive.eso.org/rdf/datali...	Release description of the collecti...	

**Row Link Type**  
Fixed Access URL

**Row Detail**

**access\_url:** http://archive.eso.org/datalink/links?ID=ivo://eso.org/ID?ADP.2015-04-13T10:12:41.540

**content\_type:** application/fits

**content\_length:** 51713

**description:** Ancillary file associated to the requested file

**semantics:** #auxiliary

**URL:** http://archive.eso.org/datalink/links?ID=ivo://eso.org/ID?ADP.2015-04-13T10:12:41.540

Type: **FITS\_IMAGE** Action: **View image internally** **Invoke**

**Result:** FAIL No responses

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**TOPCAT(1): Table Browser**

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**TOPCAT(1): Activation - View Datalink Table**

DataLink Table

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6	http://archive.eso.org/rdf/datali...	Release description of the collecti...	

**Row Link Type**  
Fixed Access URL

**Row Detail**

**access\_url:** http://archive.eso.org/datalink/links?ID=ivo://eso.org/ID?ADP.2015-04-13T10:11:05.370

**content\_type:** application/fits

**content\_length:** 50549

**description:** Ancillary file associated to the requested file

**semantics:** #auxiliary

**URL:** http://archive.eso.org/datalink/links?ID=ivo://eso.org/ID?ADP.2015-04-13T10:11:05.370

Type: **FITS\_IMAGE** Action: **View image internally** **Invoke**

**Result:** FAIL No responses

- How to identify which is the same?
- Row index? Look for similar (**semantics**, **description**) values?
- New column **link\_code**(?), assessed for equality, might be nice

# DataLink Usage

- DataLink URL column pattern:

- VOTable has a column with a URL referencing a DataLink table
- This looks like a “standard” /expected usage pattern
- ... but there’s no way to mark up the VOTable to indicate that’s what it is
- Hard for clients to present an intuitive/easy user interface


*Hacky solution:* `columnName.toLowerCase().contains("datalink")`

- see [Characterising URL columns](#) DAL thread

- Lots of freedom in usage

 Good for services

- ▶ can accommodate many different ways to distribute associated data

 Some problems for clients/users

- ▶ may not be obvious what usage pattern the data provider has in mind
- ▶ may be difficult to configure default/sensible/repeated use for a given “link”