



RegTAP 1.1 Implementation  
IVOA Interop, Paris, May 2019  
Registry Working Group

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## RegTAP 1.1 Implementations Today:

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- AIP DaCHS TAP service (ivo://aip.gavo.org/tap)
- GAVO Data Center TAP service (ivo://org.gavo.dc/tap)
- PADC TAP Server on voparis-rr.obspm.fr TAP service (ivo://purx/tap)
  - Generally serving publishing registries (and purx)
  - 1<sup>st</sup> reference implementation – some shared architecture & code
- MAST STScI Registry TAP service (ivo://archive.stsci.edu/regtap)
  - Full Searchable registry – serves resources from all registries in the RofR
  - 2<sup>nd</sup> reference implementation
    - MSSQL Server
    - Windows IIS Server
    - C#/asp.net + Java ADQL translator



## RegTAP 1.1 Non-schema Content Changes

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New `res_detail.xpath` value: `/capability/interface/testQueryString`

- Useful but not enough to feed validators for multi-interface capabilities.

More generic type information in the schema tables

- `string`, `integer`, `real`, `string+timestamp`.

Map terms from VOResource 1.0 to VOResource 1.1, using RDF vocabularies

- For DataCite compatibility
- May no longer match OAI / other interfaces (especially for full search registries, which cannot change remote contents)

RegTAP column	Old term	New term
<code>res_date.value_role</code>	<code>representative</code>	<code>Collected</code>
<code>res_date.value_role</code>	<code>creation</code>	<code>Created</code>
<code>res_date.value_role</code>	<code>update</code>	<code>Update</code>
<code>relationship.relationship_type</code>	<code>mirror-of</code>	<code>IsIdenticalTo</code>
<code>relationship.relationship_type</code>	<code>service-for</code>	<code>IsServiceFor</code>
<code>relationship.relationship_type</code>	<code>served-by</code>	<code>IsServedBy</code>
<code>relationship.relationship_type</code>	<code>derived-from</code>	<code>IsDerivedFrom</code>



## RegTAP 1.1 Query Changes

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### ADQL 2.1

- TAP Servers implementing RegTAP 1.1 **MUST** implement ADQL 2.1, and they **MUST** implement the ILIKE operator as specified in ADQL 2.1 (which includes its declaration in their capabilities record).

```
SELECT ivo_id, access_url
FROM rr.capability NATURAL JOIN rr.resource NATURAL JOIN rr.interface NATURAL JOIN rr.res_subject
WHERE standard_id LIKE 'ivo://ivoa.net/std/sia%' AND intf_role='std' AND
      (res_subject ILIKE '%spiral%' OR 1=ivo_hasword(res_description, 'spiral')
      OR 1=ivo_hasword(res_title, 'spiral'))
```

### Client Recommendations:

- When discovering standard services clients should (again) constrain intf\_role to std rather than intf\_type to vs:ParamHTTP.
  - (Was a RegTAP 1.0 workaround, fixed)
- Clients not prepared to authenticate to services should always include authenticated\_only=0 condition when retrieving access URLs from Reg-TAP 1.1 services



## RegTAP 1.1 Schema Changes

rr.resource

Column name	Utype	Data type	Description
rights_uri	xpath:/rights/@rightsURI	string	A URI identifying a license the data is made available under.

rr.alt\_identifier (*NEW TABLE!*)

VOResource 1.1 allows annotation with alternate identifiers via `<altIdentifier>` element

Examples: DOIs, ORCIDs, and bibcodes. [orcid:0000-0002-1891-3794](https://orcid.org/0000-0002-1891-3794) [doi:10.17909/T9QC7K](https://doi.org/10.17909/T9QC7K)

Column name	Utype	Data type	Description
ivoid	xpath:/identifier	string	The parent resource.
alt_identifier		string	An identifier for the resource or an entity related to the resource in URI form.



## RegTAP 1.1 Schema Changes: rr.interface

rr.interface

Column name	Utype	Data type	Description
mirror_url	xpath:mirrorURL	string	Secondary access URLs of this interface, separated by hash characters.
authenticated_only	xpath:securityMethod	integer[]	A flag for whether an interface is available for anonymous use (=0) or only authenticated clients are served(=1).

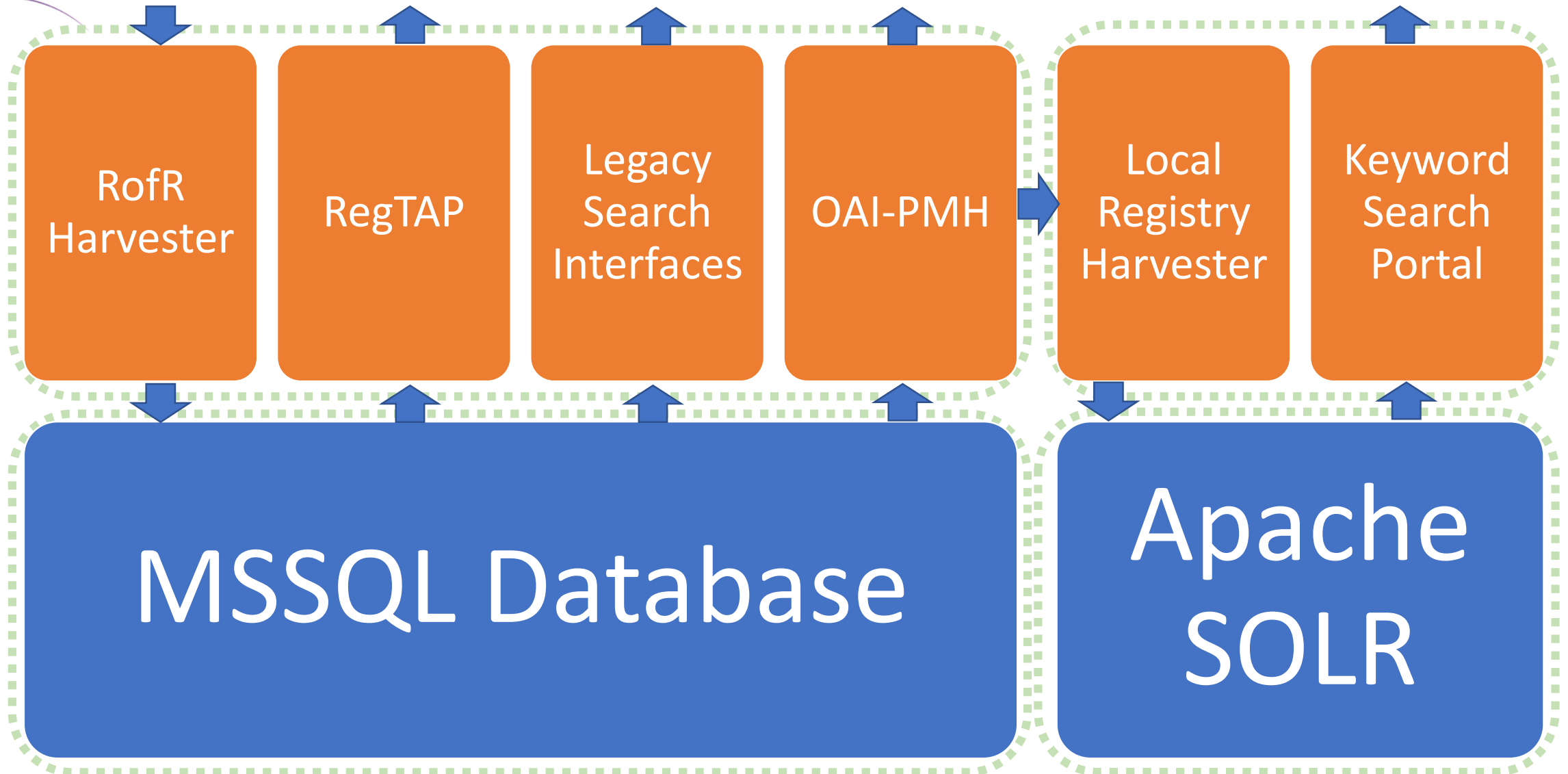
~~rr.interface.security\_method\_id~~

- Complicates interfaces/keys when multiple exist (CADC)
- res\_detail.xpath: /capability/interface/securityMethod/@standardID exists (not required)

Future version changes to come with real-world use cases.

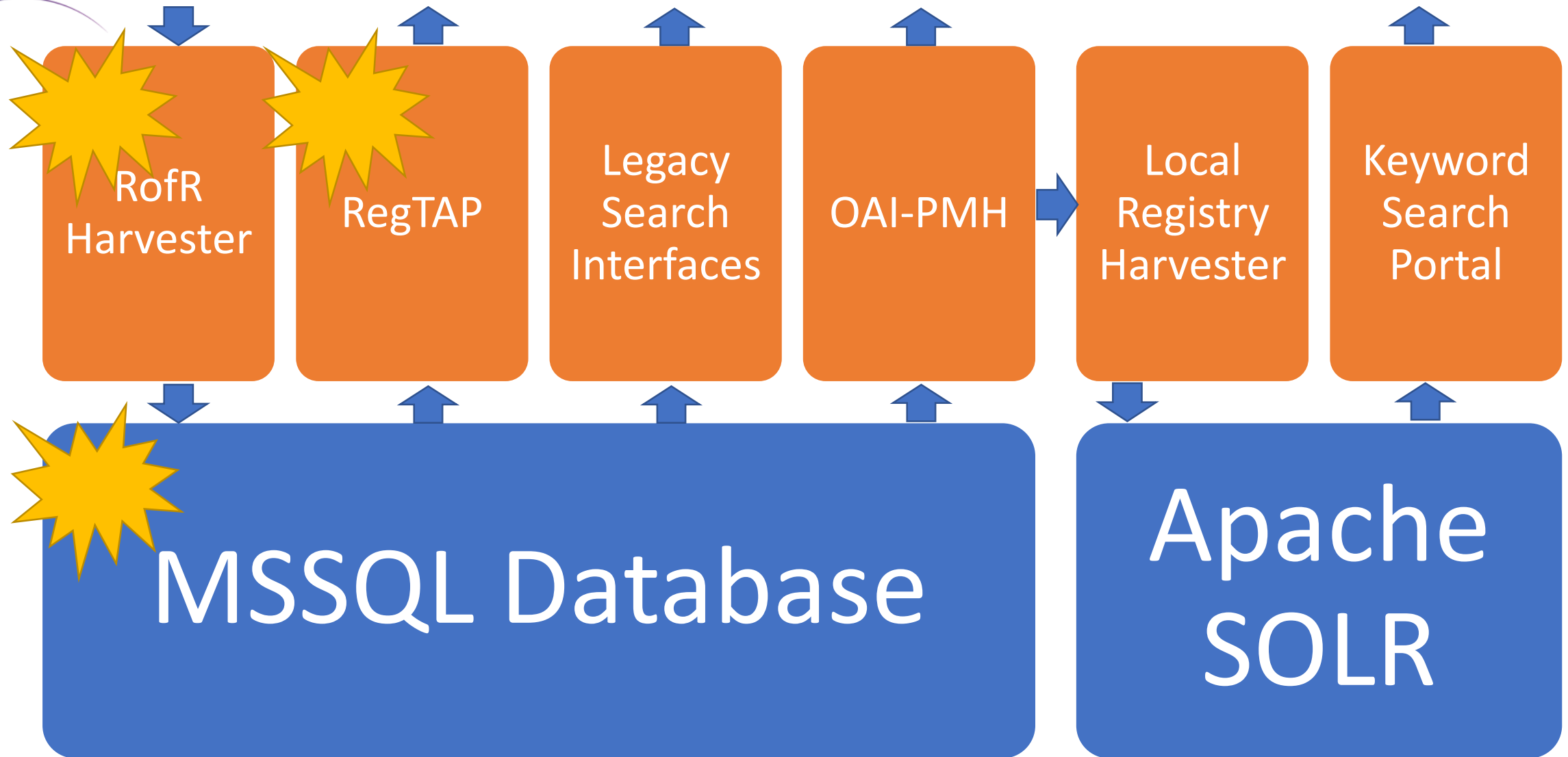


# MAST Registry Architecture





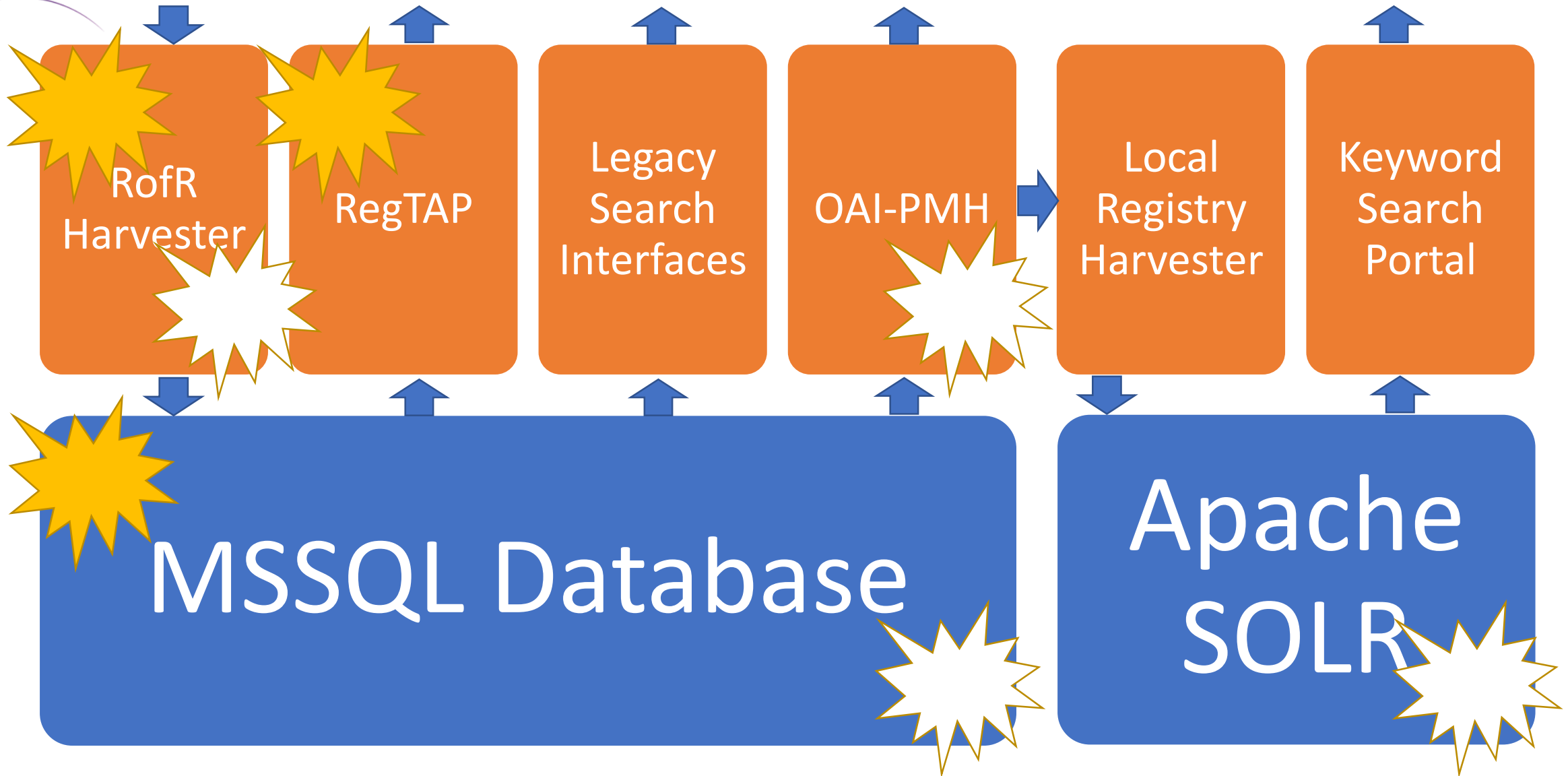
## MAST Registry Architecture: RegTAP 1.1 Changes







# MAST Registry Architecture: RegTAP 1.1 Changes & Validation





# RegTAP 1.1 Implementation Changes

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## MSSQL Database

- Empty copy of RegTAP 1.0 Schema
- Retain old copy for document versioning history
- Added new tables, columns

## RofR Harvester

- Added ingest for new tables, columns, & fields to existing XSLT scripts
- Added controlled vocabulary translation to ingest for RegTAP tables only

## RegTAP

- TAP\_SCHEMA changes for new tables, columns
- Automated tests for operations use cases & new feature examples
  - Uses DALI Examples
  - Python-based: uses astroquery TAP/TAP+ against any TAP service





# RegTAP 1.1 Implementation Changes

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## Metadata Resource Record Changes

- Added DOI <altIdentifiers> to some MAST records
- Added testquerystrings for detail ingest testing

## Full Search Registry Operations: Re-ingest all RofR registries from scratch

- To clear un-announced deletions from remote registries
- Took > 1 week
- Timeouts, known invalid / un-ingestable records: following up with curators
- TODO: reindex Apache SOLR to clear un-announced deletions

## TODO: ADQL 2.1 “ILIKE”

- Will be part of Grégory Mantele’s VOLLT ADQL Translator library, next release
- Trivial to implement as a patch for our case-insensitive MSSQL Server
- Do not hold up RFC on this feature
  - I just ran out of time



## RegTAP 1.1: Learn from my suffering

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- Lots of small changes
- A squashed diff since 1.0 would be useful documentation
- The RegTAP 1.1 standard is ready for RFC
  - Implementable on various architectures
  - Major use cases solved
  - Referential issues with database keys and security methods resolved adequately
- Most of time was spent on re-ingest process and evolving changes
  - Problem for full searchable registries only
  - And because I took opportunity for validation effort
  - And fixed some old registry bugs
  - It wasn't that bad