



RegTAP 1.1 Implementation
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Registry Working Group

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RegTAP 1.1 Implementations Today:

- 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)
 - 1st 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
 - 2nd reference implementation
 - MSSQL Server
 - Windows IIS Server
 - C#/asp.net + Java ADQL translator



RegTAP 1.1 Non-schema Content Changes

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



RegTAP 1.1 Query Changes

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). |

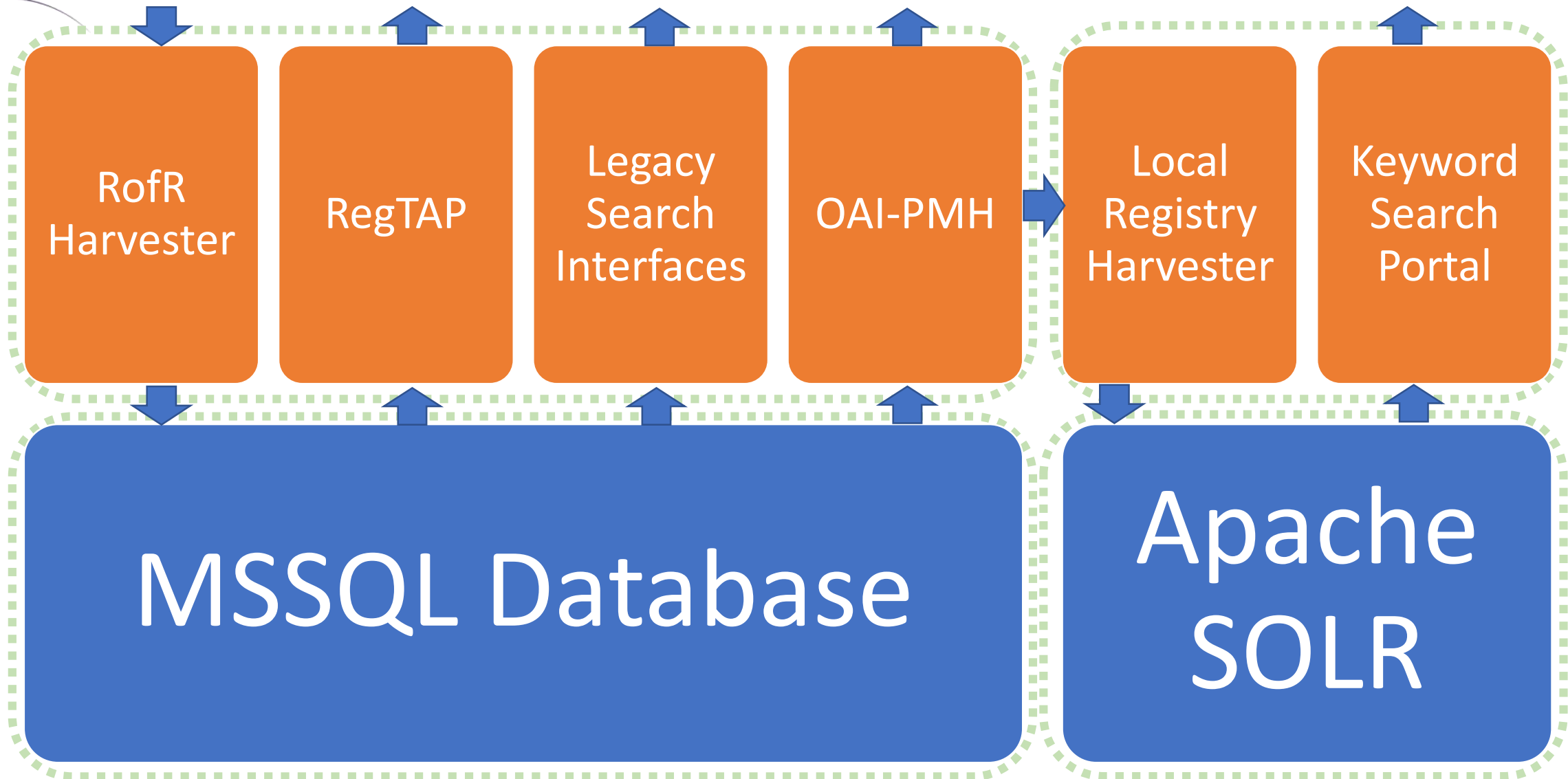
~~rr.interface.security_method_id~~

- 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.

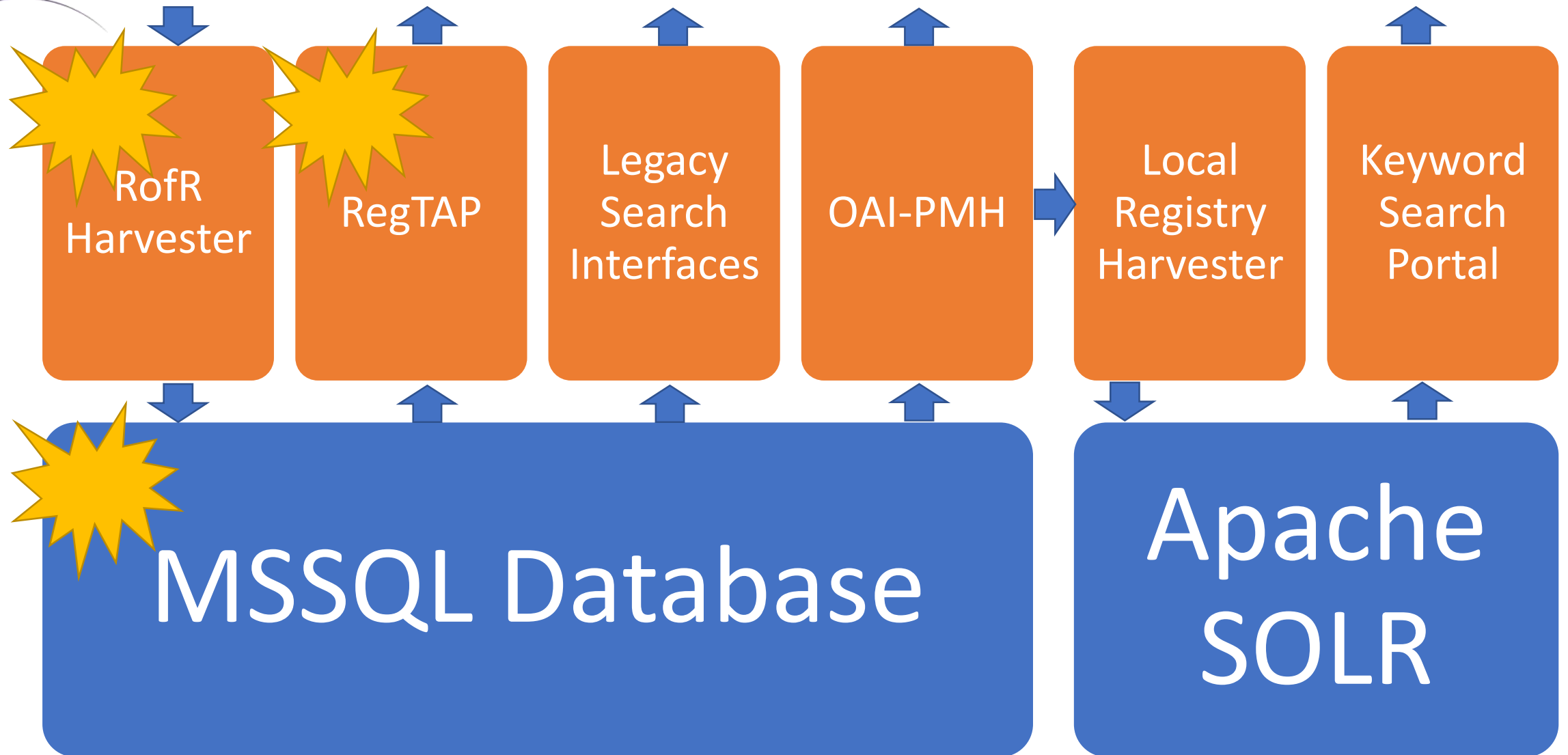


MAST Registry Architecture



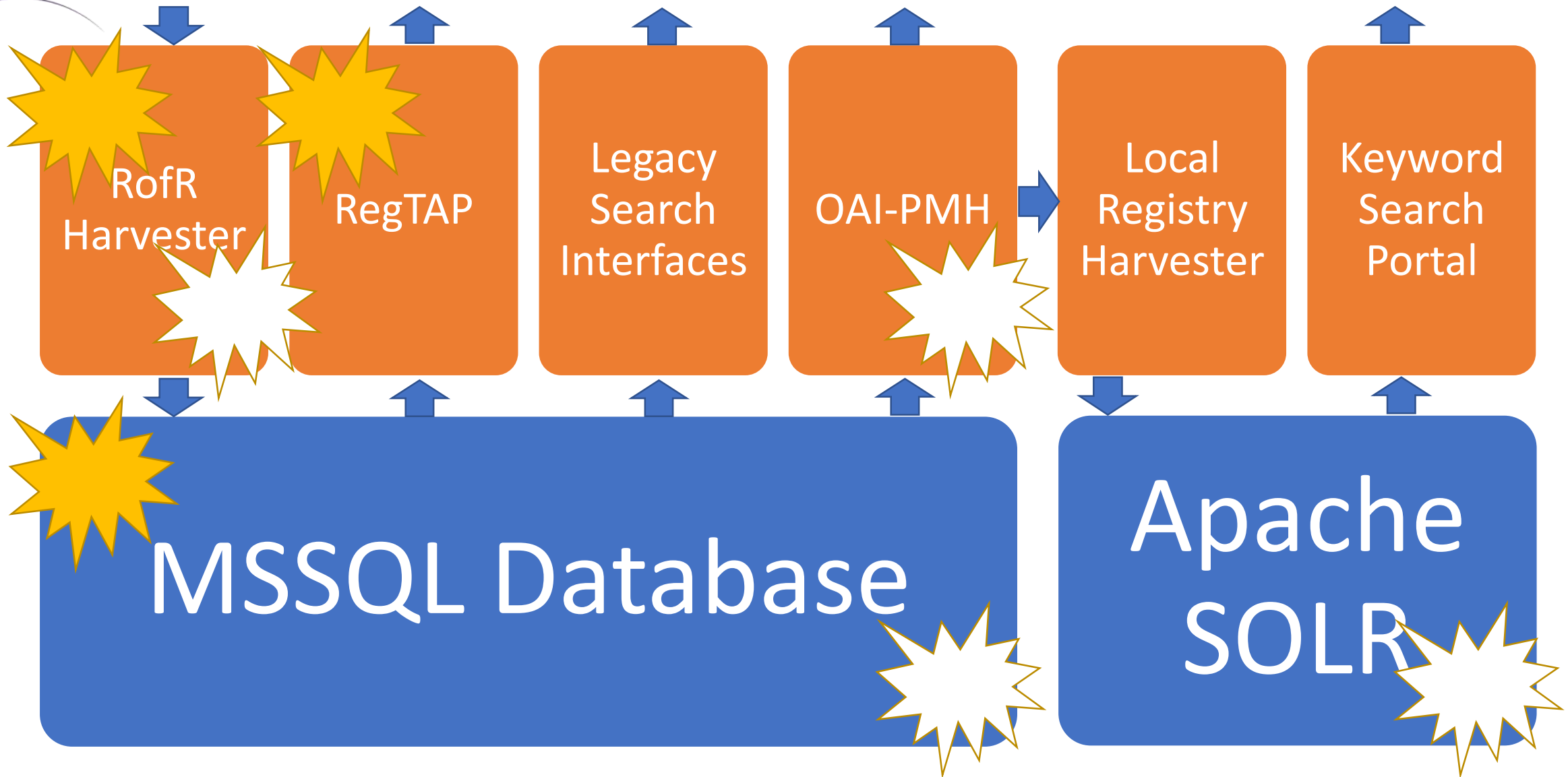


MAST Registry Architecture: RegTAP 1.1 Changes





MAST Registry Architecture: RegTAP 1.1 Changes & Validation





RegTAP 1.1 Implementation Changes

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

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
- Reindexed 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

- 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