

UNIVERSITÉ DE TECHNOLOGIE DE BELFORT-MONTBÉLIARD

Développement d'un module Javascript pour échanger des données structurées au sein de l'Observatoire Virtuel

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Observatoire astronomique
de Strasbourg





Observatoire astronomique
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- Contexte/Sujet du stage
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L'Observatoire Astronomique de Strasbourg



- **Missions principales:**
 - Recherche
 - Services d'observation enseignement
 - Diffusion de données scientifiques
 - Veille technologique



Simbad: Base de données d'objets

- des données de base
- des identifications croisées
- une bibliographie
- des mesures

(les objets astronomiques en dehors du système solaire.)

<i>Statistics</i>	
Simbad contains on 2020.01.31	
10,957,015	objects
35,660,909	identifiers
366,914	bibliographic references
20,575,626	citations of objects in papers

TAP (Table Access Protocol)

```
SELECT
*
FROM ref
WHERE
"year"=2020
```

VOTABLE

```
-<TABLE name="result_1580374584870">
-<FIELD arraysize="*" datatype="char" name="abstract" ucd="meta.record">
  <DESCRIPTION>(revisited) Abstract of published paper</DESCRIPTION>
</FIELD>
-<FIELD arraysize="*" datatype="char" name="bibcode" ucd="meta.bib.bibcode">
  <DESCRIPTION>Bibcode</DESCRIPTION>
</FIELD>
-<FIELD arraysize="*" datatype="char" name="doi" ucd="meta.code;meta.bib">
  <DESCRIPTION>DOI designation</DESCRIPTION>
</FIELD>
-<FIELD arraysize="*" datatype="char" name="journal" ucd="meta.bib.journal">
  <DESCRIPTION>Abbreviation for the journal</DESCRIPTION>
</FIELD>
-<FIELD datatype="int" name="last_page" ucd="meta.bib.page">
  <DESCRIPTION>Last page number</DESCRIPTION>
</FIELD>
-<FIELD datatype="int" name="nobject" ucd="meta.number">
  <DESCRIPTION>Number of objects studied in</DESCRIPTION>
</FIELD>
-<FIELD datatype="long" name="oidbib" ucd="meta.record;meta.bib">
  <DESCRIPTION>Bibcode internal identifier</DESCRIPTION>
</FIELD>
```

ADQL (Astronomical Data Query Language)



■ ADQL correct

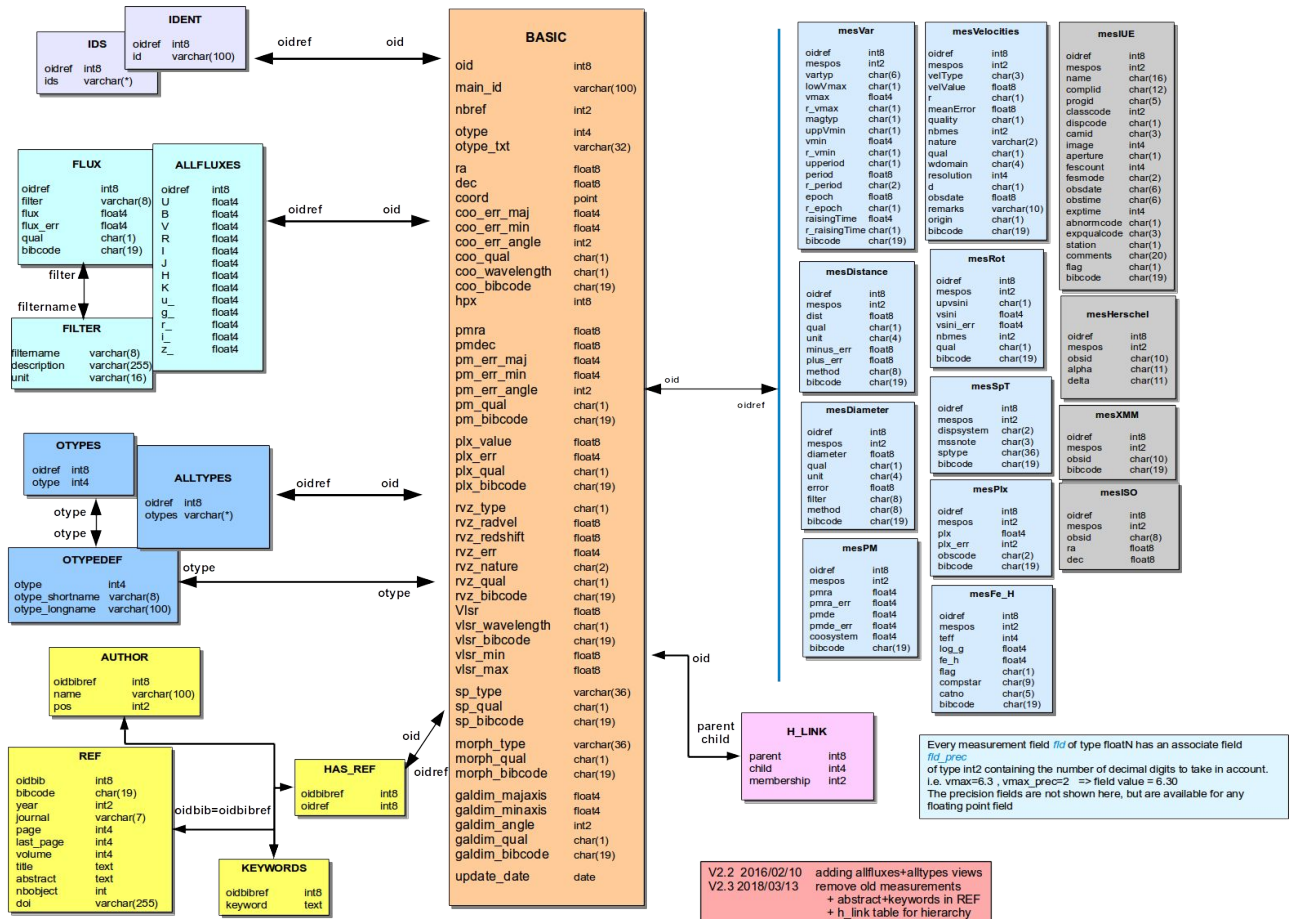
```
SELECT  
*  
FROM ref  
WHERE  
year=2020
```

Check!

Incorrect query !



- ADQL correct
- Connaître les détails





Columns of table *public.ref* of node *simbad*

Q Search

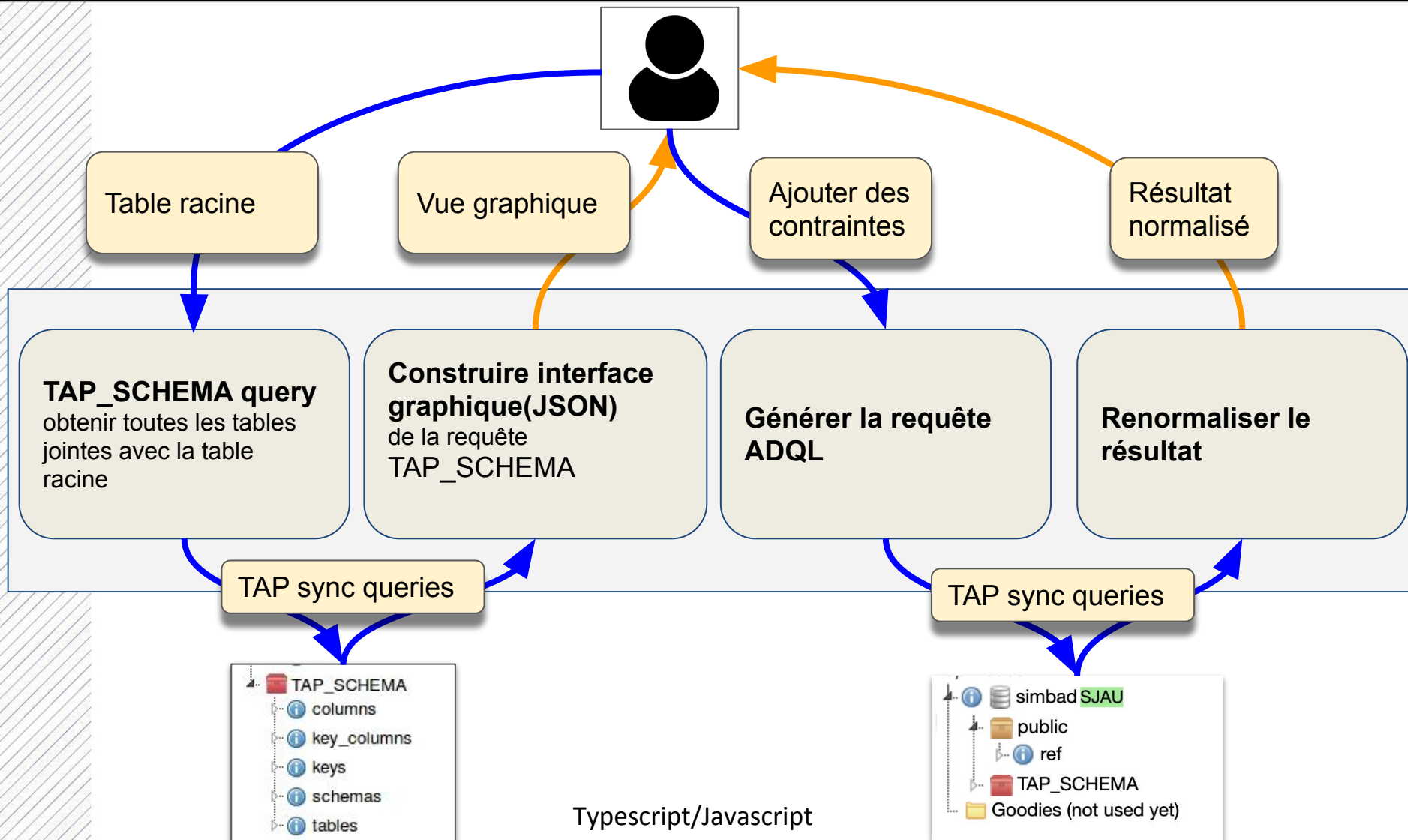
nameattr	unit	ucd	utype	dataType	description
abstract		meta.record		UNKNOWN	(revisited) Abstract of published paper
bibcode		meta.bib.bibcode		CHAR	Bibcode
doi		meta.code;meta.bib		VARCHAR	DOI designation
journal		meta.bib.journal		VARCHAR	Abbreviation for the journal
last_page		meta.bib.page		INTEGER	Last page number
nboject		meta.number		INTEGER	Number of objects studied in
oidbib		meta.record;meta.bib		BIGINT	Bibcode internal identifier
page		meta.bib.page		INTEGER	page number
title		meta.title		CLOB	Title
volume		meta.bib.volume		INTEGER	volume number
year		meta.note;meta.bib		SMALLINT	Publication year



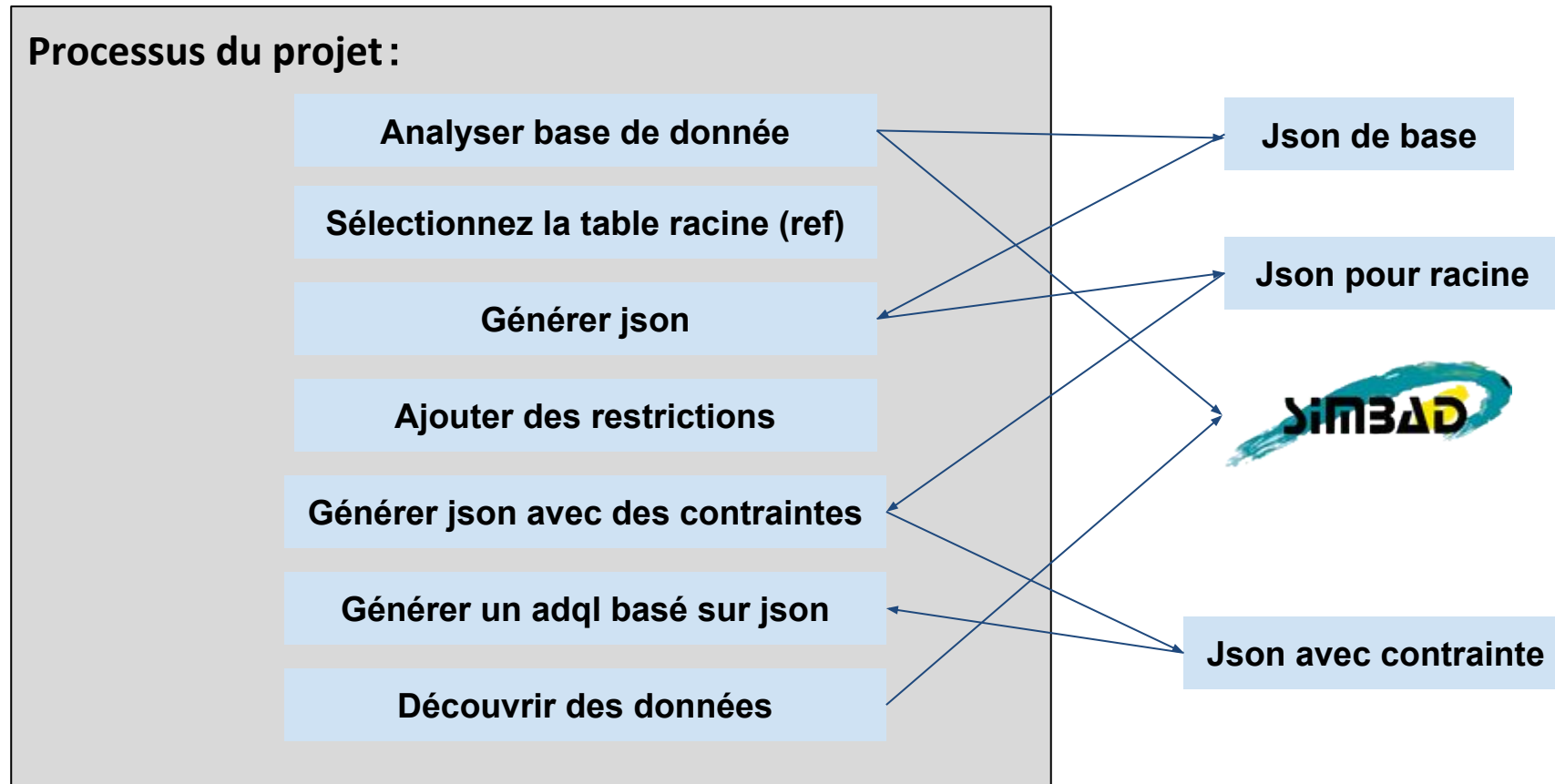
```
-<TABLE name="result_1580374584870">
-<FIELD arraysize="*" datatype="char" name="abstract" ucd="meta.record">
  <DESCRIPTION>(revisited) Abstract of published paper</DESCRIPTION>
</FIELD>
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  <DESCRIPTION>Bibcode</DESCRIPTION>
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</FIELD>
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  <DESCRIPTION>Bibcode internal identifier</DESCRIPTION>
</FIELD>
```

Sujet du stage: Développement d'un module Javascript pour échanger des données structurées

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Processus du projet :



■ Analyser TAP_SCHEMA (AJAX)

TAP_SCHEMA

schemas

tables

columns

keys

key_columns

table_index	schema_name	table_name	table_type	description
-1	public	basic	table	General data about an a ...
-1	public	otypes	table	List of all object type ...
-1	public	ids	view	all names concatenated ...
-1	public	alltypes	view	all object types concat ...
-1	public	otypedef	table	all names and definitio ...

key_id	from_table	target_table
otypeToBasic	otypes	basic
idsToBasic	ids	basic
otypesToBasic	alltypes	basic
otypedefToOtype	otypedef	otypes

key_id	from_column	target_column
otypeToBasic	oidref	oid
idsToBasic	oidref	oid
otypesToBasic	oidref	oid
otypedefToOtype	otype	otype

Travail réalisé

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Change RootTable ▾

```
mesRot : Stellar Rotational Velocities.
  basic : General data about an astronomical object

mesIUE : International Ultraviolet Explorer observing log.
  basic : General data about an astronomical object

mesHerschel : The Herschel observing Log
  basic : General data about an astronomical object

mesFe_h : Collection of metallicity, as well as Teff,logg
  basic : General data about an astronomical object

basic : General data about an astronomical object
  otypes : List of all object types associated with an object
  otypedef : all names and definitions for the object type
  ident : Identifiers of an astronomical object
  flux : Magnitude/Flux information about an astronomical object
  has_ref : Associations between astronomical objects and references
  mesDistance : Collection of distances (pc, kpc or Mpc)
  mesDiameter : Collection of stellar diameters.
  mesFe_h : Collection of metallicity, as well as Teff,logg
  mesISO : Infrared Space Observatory (ISO) observing log.
  mesIUE : International Ultraviolet Explorer observing log.
  mesMK : Collection of spectral types.
  mesPLX : Collection of trigonometric parallaxes.
  mesPM : Collection of proper motions.
  mesRot : Stellar Rotational Velocities.
  mesVar : Collection of stellar variability types and periods.
  mesVelocities : Collection of HRV, Vlsr, cz and redshifts.
  mesXmm : XMM observing log.
  h_link : hierarchy of membership measure
  mesHerschel : The Herschel observing Log
```

```
"basic": {
  "schema": "public",
  "description": "General data about an astronomical object",
  "join_tables": {
    "otypes": {
      "schema": "public",
      "columns": [],
      "constraints": "",
      "from": "oidref",
      "target": "oid"
    }
  }
},
```

Table racine

toutes les tables jointes à la table racine(Premier niveau)



Bibliographie pour 2019

```
SELECT
TOP 100
"public".ref.*
FROM "public".ref
WHERE
ref."year"=2019
```

TAP TEST Obas

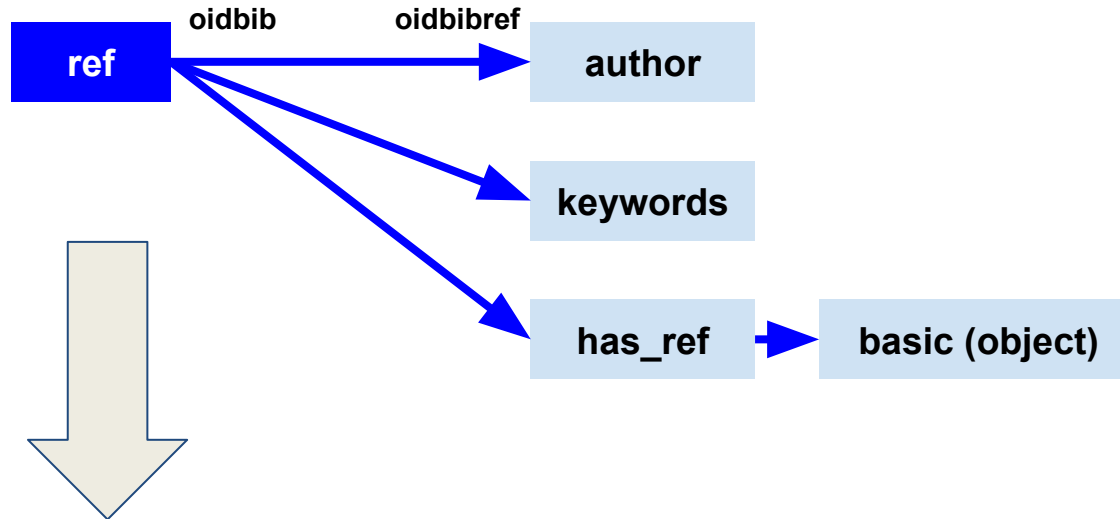
Object Bilio

```
ref: Bibliographic reference
  Aide ref."year"=2019
has_ref: Associations between astronomical objects and their bibliographic references
  Aide constrains
basic: General data about an astronomical object
  Aide constrains
otypes: List of all object types associated with an object
  Aide constrains
otypedef: all names and definitions for the object types
  Aide constrains
```

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Travail réalisé

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```
SELECT TOP 100 *  
FROM "public".author  
JOIN "public".ref  
ON "public".ref.oidbib =  
"public".author.oidbibref  
WHERE "public".ref."year" = 2019
```


The amount of data is: 100

abstract

open

We model the velocity dispersion of the ultradiffuse galaxy NGC 105

author

name	oidbibref	pos
TOTH V.T.	360656	2
MOFFAT J.W.	360656	1

keywords

gravitation,galaxies: dwarf,

object

FLSVLA J171641.3+603548,

- **Les objectifs ont été atteints**

Module de médiation

Prototype de présentation

- **Réalisation des fonctions**

Choisir la table racine

Générer vue graphique

Recevoir contrainte

Générer ADQL

Découvrir les données des tables

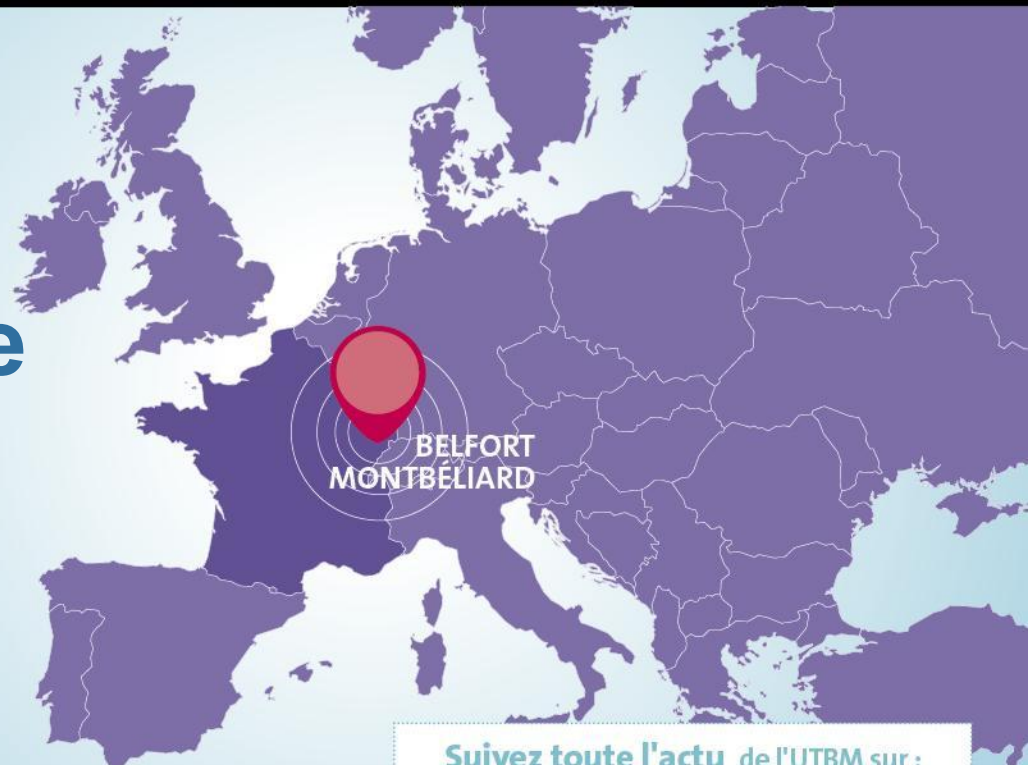
- **Modules plus utilisables**
- **Contraintes d'entrée plus intelligente**
- **Colonne de sortie sélectionnable**
-
.....





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Merci pour votre
attention.



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