

	<h1>TASMAN 1.3.0 User Guide</h1>	<table border="1"> <tr> <td>Document No.</td> <td>TSM-UG 1.3.0</td> </tr> <tr> <td>Issue/Rev. No.</td> <td>1.3.0</td> </tr> <tr> <td>Date</td> <td>Mar 27, 2018</td> </tr> <tr> <td>Page</td> <td>1 of 9</td> </tr> </table>	Document No.	TSM-UG 1.3.0	Issue/Rev. No.	1.3.0	Date	Mar 27, 2018	Page	1 of 9
Document No.	TSM-UG 1.3.0									
Issue/Rev. No.	1.3.0									
Date	Mar 27, 2018									
Page	1 of 9									

# TASMAN 1.3.0 User Guide

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## Contents

<b>1</b>	<b>Introduction</b>	<b>2</b>
<b>2</b>	<b>Requirements</b>	<b>2</b>
2.1	Java . . . . .	2
2.2	RDMS . . . . .	2
<b>3</b>	<b>Installation</b>	<b>2</b>
3.1	Create a proper SQL user . . . . .	2
3.2	MySQL . . . . .	3
3.3	PostgreSQL . . . . .	3
<b>4</b>	<b>Naming convention</b>	<b>3</b>
<b>5</b>	<b>Usage</b>	<b>3</b>
5.1	Login . . . . .	3
5.2	Credentials insertion . . . . .	4
5.3	Checking for inconsistencies . . . . .	5
5.4	TAP_SCHEMA editing . . . . .	5
5.4.1	Column indexes editor . . . . .	6
5.4.2	UCD validation tool . . . . .	7
5.5	Users management . . . . .	8
<b>6</b>	<b>Advanced configuration</b>	<b>8</b>
6.1	Creating custom TAP_SCHEMA versions . . . . .	8
6.1.1	Example: extending the TAP_SCHEMA standard 1.1 version . . . . .	9



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Document No.	TSM-UG 1.3.0
Issue/Rev. No.	1.3.0
Date	Mar 27, 2018
Page	2 of 9

## 1 Introduction

TAP\_SCHEMA is a particular database schema defined in the Table Access Protocol (TAP) IVOA Standard. It is intended for containing metadata related to a TAP service, like schemata, tables and columns exposed by the service or datatype, indexing, description and other information about columns.

TASMAN is a Java EE application that provides a graphical user interface that can be used to create or edit a TAP\_SCHEMA also by people that don't have specific SQL skills.

TASMAN simplest set up consists in installing it on the same machine that is storing the database from which you want to create a TAP\_SCHEMA and that will store the TAP\_SCHEMA itself. However, TASMAN can act as a client for an arbitrary numbers of database servers. In that case you have to use TASMAN with a SQL user having proper permissions (see [subsection 3.1](#)).

## 2 Requirements

### 2.1 Java

TASMAN needs Java 7 or higher.

### 2.2 RDMS

Currently TASMAN supports:

- MySQL (tested on version 5.6+) or MariaDB;
- PostgreSQL (tested on version 9.3+);

**Note:** we have done more testing on MySQL.

## 3 Installation

There are 2 ways for installing TASMAN:

- installing the embedded version: this consists in simply executing the self-extracting `install.sh` script with root privileges. Then simply run the `tasman` command for executing TASMAN.
- installing TASMAN on an existing Java EE application server: this can be done using the `build.sh` script contained into TASMAN git repository<sup>1</sup> for producing an appropriated war file to be deployed on the desired server. Follow the instruction in the README file on the repository<sup>2</sup>.

### 3.1 Create a proper SQL user

TASMAN has to login into a database server with an user that has to be able to:

- read (`SELECT`) from all schemata that you want to add to the TAP\_SCHEMA;
- create a new schema (the TAP\_SCHEMA schema), create new tables on that schema and insert or delete rows;

If you installed TASMAN on the same machine hosting the database on which you want to work you can simply use TASMAN with credentials that you usually use. Otherwise consider that you would need to create a proper user allowed to access the machine hosting the database from the machine hosting TASMAN.

<sup>1</sup>[https://www.ict.inaf.it/gitlab/molinaro/tap\\_schema\\_manager](https://www.ict.inaf.it/gitlab/molinaro/tap_schema_manager)

<sup>2</sup>We are currently supporting GlassFish 4.1+ and Tomcat 8+, however other application servers could be easily supported including proper libraries, so if you need to run it on a specific server asks developers.



# TASMAN 1.3.0 User Guide

Document No.	TSM-UG 1.3.0
Issue/Rev. No.	1.3.0
Date	Mar 27, 2018
Page	3 of 9

## 3.2 MySQL

A typical set up could be created with the following statements:

```
CREATE USER 'tsm'@'<tsm-host>' IDENTIFIED BY '<tsm-password>';
GRANT SELECT ON *.* TO 'tsm'@'<tsm-host>';
GRANT ALL PRIVILEGES ON `<tap_schema>`.* TO 'tsm'@'<tsm-host>';
```

If you are stuck on connection problems check also the content of MySQL configuration file (usually located at `/etc/mysql/my.cnf` or `/etc/my.cnf`), looking in particular for the following options:

- `bind-address`
- `skip-networking`

**Important note** if your `TAP_SCHEMA` references some views built using UDFs (User Defined Functions) the MySQL user used by TASMAN needs to have grants allowing using those UDFs.

## 3.3 PostgreSQL

PostgreSQL roles configuration is quite complex so we suggest you accessing the database from TASMAN using the standard `postgres` user.

You may have to configure the `pg_hba.conf` file (typical location for this files could be `/var/lib/pgsql/1/data/pg_hba.conf` or `/etc/postgresql/9.x/main/pg_hba.conf`), adding the allowed IP address with the `md5` method.

TYPE	DATABASE	USER	ADDRESS	METHOD
host	all	all	192.168.0.5/32	md5

## 4 Naming convention

Unlike the standard, our TASMAN allows the `TAP_SCHEMA` to have an arbitrary name and to be located both on a different database server and a different machine from the source schema, although TAP-1.1 goes this same direction. This implies also the support for multiple `TAP_SCHEMA` schemata on the same database server.

To distinguish these 2 database servers we chosen the following naming convention:

- **Source database server:** the machine hosting the database referenced by the `TAP_SCHEMA`.
- **TAP\_SCHEMA database server:** the machine hosting the database containing the `TAP_SCHEMA` schema.

In the simplest configurations these 2 machine are the same machine.

## 5 Usage

### 5.1 Login

On the first page TASMAN asks you for the password you had configured in the first setup step.

## 5.2 Credentials insertion

If you login successfully a page called “Credentials insertion” is shown to you. Here you can add an arbitrary number of items containing information regarding database connections and TAP\_SCHEMA settings.

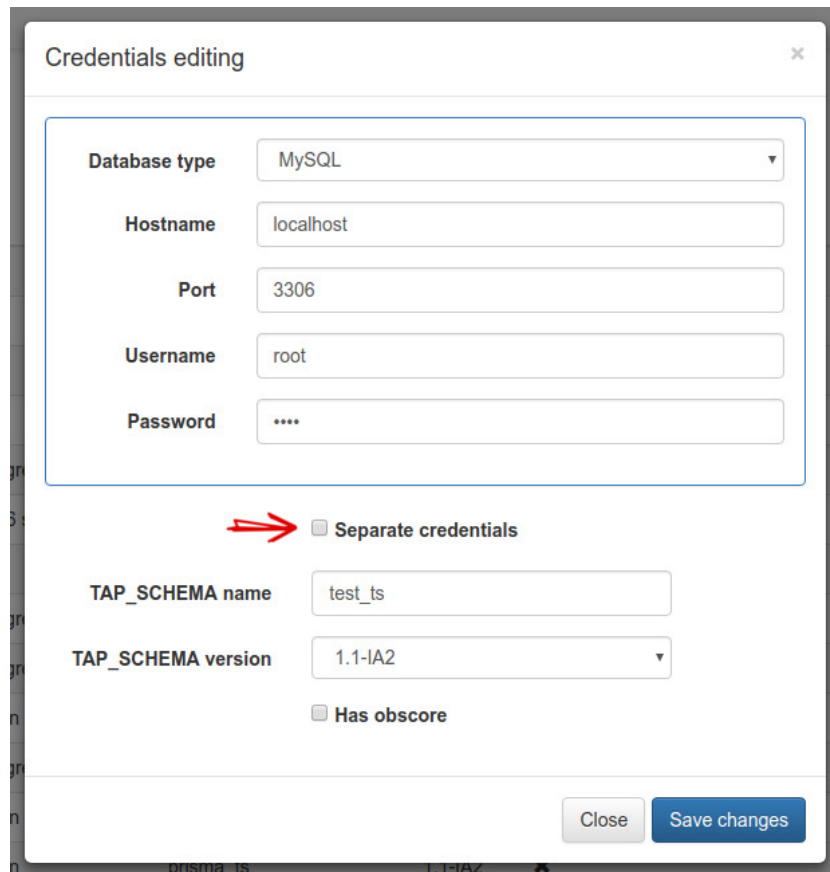








Figure 1: Credentials editing modal

For adding new credentials press the “Add new database credentials” button. A modal window will open; it contains:

- a set of inputs for specifying database connection parameters;
- a “Separate credentials” checkbox: select this if the source database server is different from the TAP\_SCHEMA database server (see [Figure 1](#));
- an input for specifying a custom TAP\_SCHEMA name;
- a version for the TAP\_SCHEMA (see also ...);
- a “Has obscure” checkbox: select this if you want TASMAN will generate also the ObsCore table;
- if the “Has obscure” checkbox is selected, an input for specifying a custom name for the ivoa schema (which contains the ObsCore table).

When you press the “Save changes” button, credentials will be permanently stored in the file you have specified during the installation.

Each saved credential will appear in a row of a table (Figure 2).

Credentials	TAP_SCHEMA name	Version	Obscore	Obscore version	IVOA schema name	Login
  (MySQL) localhost:3306 root	test_tap_schema	1.1	✓	1.1		
  (MySQL) portal1.ia2.inaf.it:3306 sonia	TAP_SCHEMA	1.1-IA2	✓	1.1	ivoa	




 delete credential  
 edit credential  
 login using this credential

Figure 2: Use a saved credential

When you press the “Login in” button from a saved credential row TASMAN will try to load the TAP\_SCHEMA.

### 5.3 Checking for inconsistencies

During the TAP\_SCHEMA loading, TASMAN will check for inconsistencies. This means that the source database structure is compared with data stored into the existing TAP\_SCHEMA in order to recognize inconsistent situations like:

- TAP\_SCHEMA contains schemata, tables or columns that are not contained anymore into the source database;
- a column in the TAP\_SCHEMA has a different indexing or datatype compared with the source database metadata;

If some of these situations are detected TASMAN will show a list of inconsistencies and if you click on the “Proceed” button the application will modify the TAP\_SCHEMA content in order to be consistent with the database structure.

### 5.4 TAP\_SCHEMA editing

From the TAP\_SCHEMA editor interface you can add or remove schemata, tables and columns from the TAP\_SCHEMA and edit their properties like utype, description and more.

On each moment you have a selected schema, table and column and you can see properties regarding that objects. Schemata and tables are displayed in a tab interface, while columns are displayed in a scrollable list.

Clicking the green buttons containing a “plus symbol” (Figure 4) will open a modal dialog from which you can select elements to add into the TAP\_SCHEMA.

In the upper part of the editor page you can find some buttons (Figure 3) for performing the following actions:

- **Show update operations:** opens a modal dialog showing the list of operations that will be performed on the TAP\_SCHEMA database if you press the “Update” button.

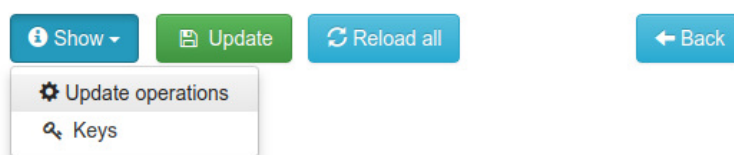


Figure 3: Buttons on the upper part of the page

- **Show keys:** opens a modal dialog showing the database keys exposed by the TAP\_SCHEMA.
- **Update:** stores on the TAP\_SCHEMA database the modifications that you have performed using the editor.
- **Reload all:** reloads the entire TAP\_SCHEMA, performing the consistency check again (useful if you have changed the source database structure while the TAP\_SCHEMA editor was opened).
- **Back:** returns on the “Credentials insertion page”.

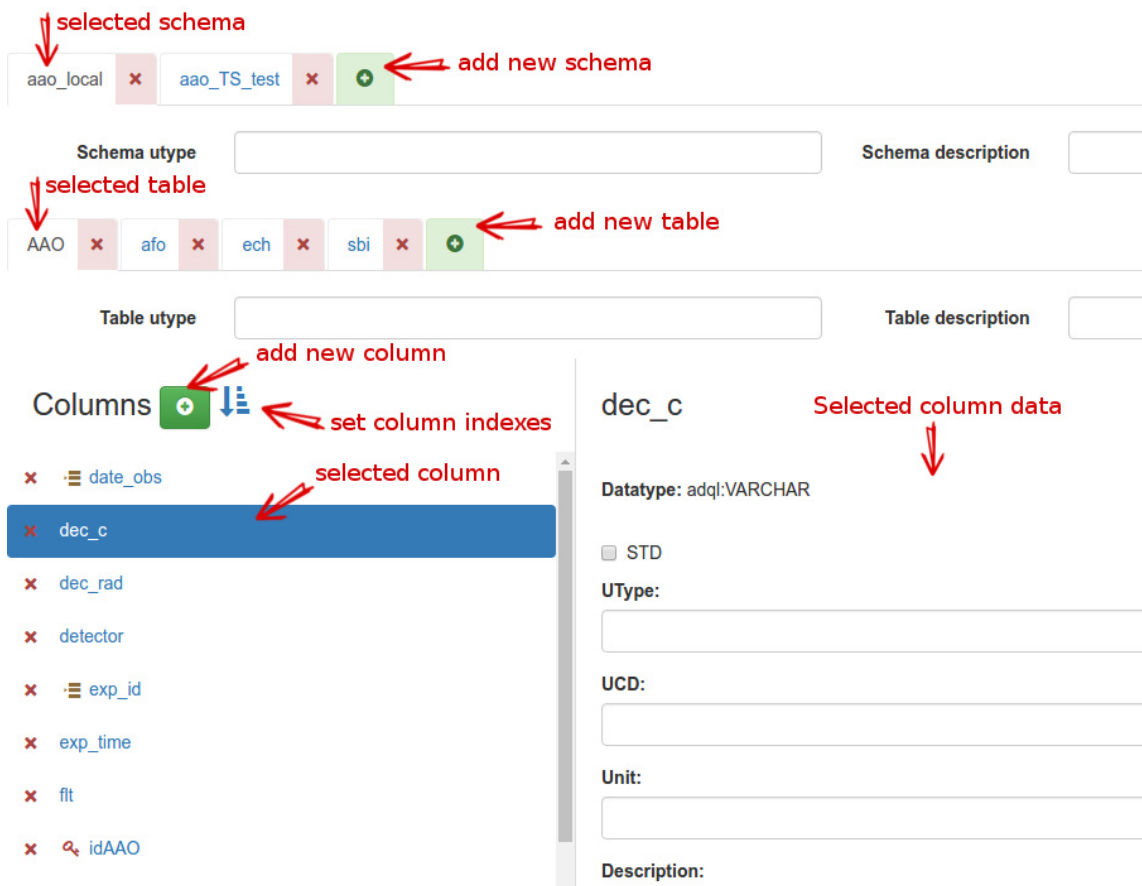


Figure 4: Editing of a TAP\_SCHEMA

### 5.4.1 Column indexes editor

Clicking on the “sorting icon” on the top of the columns panel a modal dialog will be opened. This dialog allows to set the value of the column index properties simply sorting the columns of the selected table. The modal is split in two parts: on the left there are the unsorted columns (their column index will remain unset); on the right there are the sorted columns (first column of the list will have column index equals to 1, the index is then incremented by one on each following column).

You can sort the columns simply dragging them on the desired position.

You can also select all the columns on the left (or a subset of them) and move them to the right and vice versa.

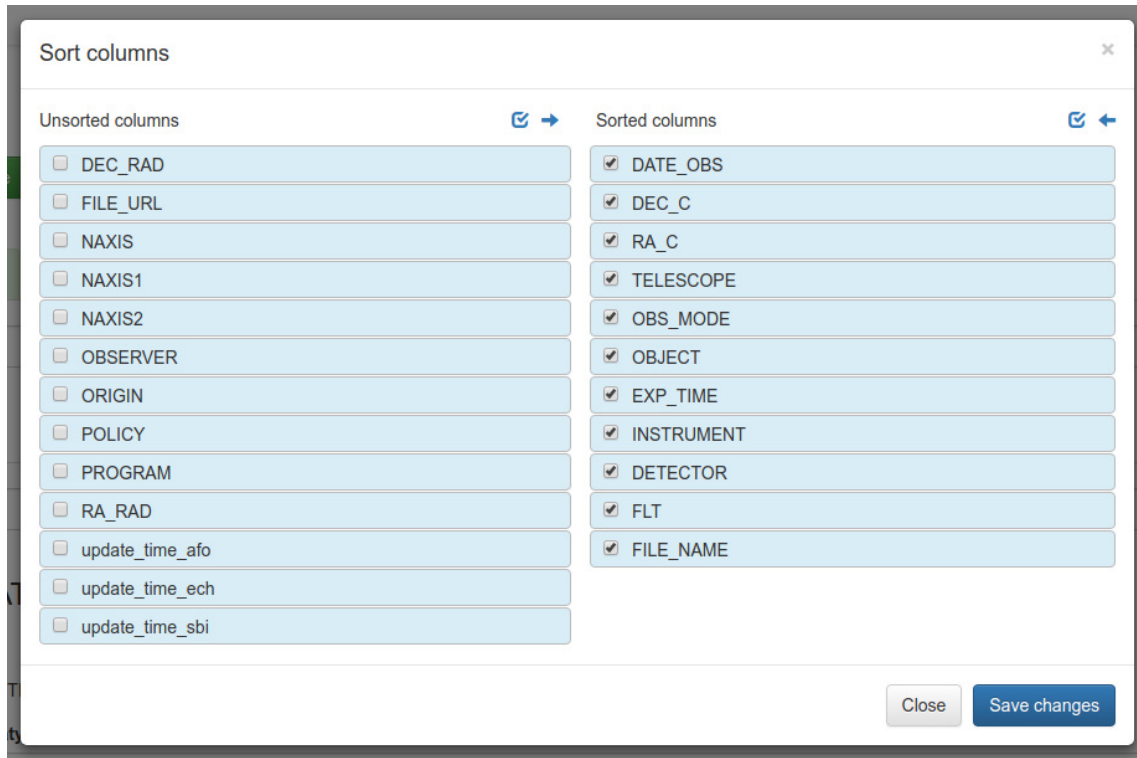


Figure 5: Sorting columns for generating the column index properties

## 5.4.2 UCD validation tool

Clicking on column UCD text input a modal appears and it can be used to search and validate UCDs.

The user can choose:

- search by description (Figure 6);
- manual insertion;

The first option is based on the Strasbourg astronomical Data Center (CDS) dedicated services<sup>3</sup> but relies on an additional service, called UCD\_REST, that wraps the SOAP CDS services into a REST architecture. The URL of this web service can be changed during the installation.

The second option is based on the UcdValidator library<sup>4</sup> written by Grégory Mantelet of the Astronomisches Rechen Institut (ARI) and allows validation of manual inserted UCDs. This is useful both for validating custom UCD and in the case where the CDS services are temporary unavailable.

When the UCD search dialog is opened, TASMAN uses the CDS services for searching an UCD from a textual description.

The result of the search consists in a selected UCD and a list of other available UCD words. It is possible to select some of these words and click the “Rebuild UCDs” button to obtain other valid combinations.

On the top menu bar there is a “Custom UCDs” button. It opens a modal from which the user can add some customized UCDs. It is possible to insert them using the “Manual insertion” mode on the UCD insertion dialog. Custom UCDs are shared between all TASMAN users. The admin can delete all UCDs; generic users can delete only UCDs they have created.

<sup>3</sup><http://cdsweb.u-strasbg.fr/UCD/>

<sup>4</sup><https://github.com/gmantele/ucdvalidator>

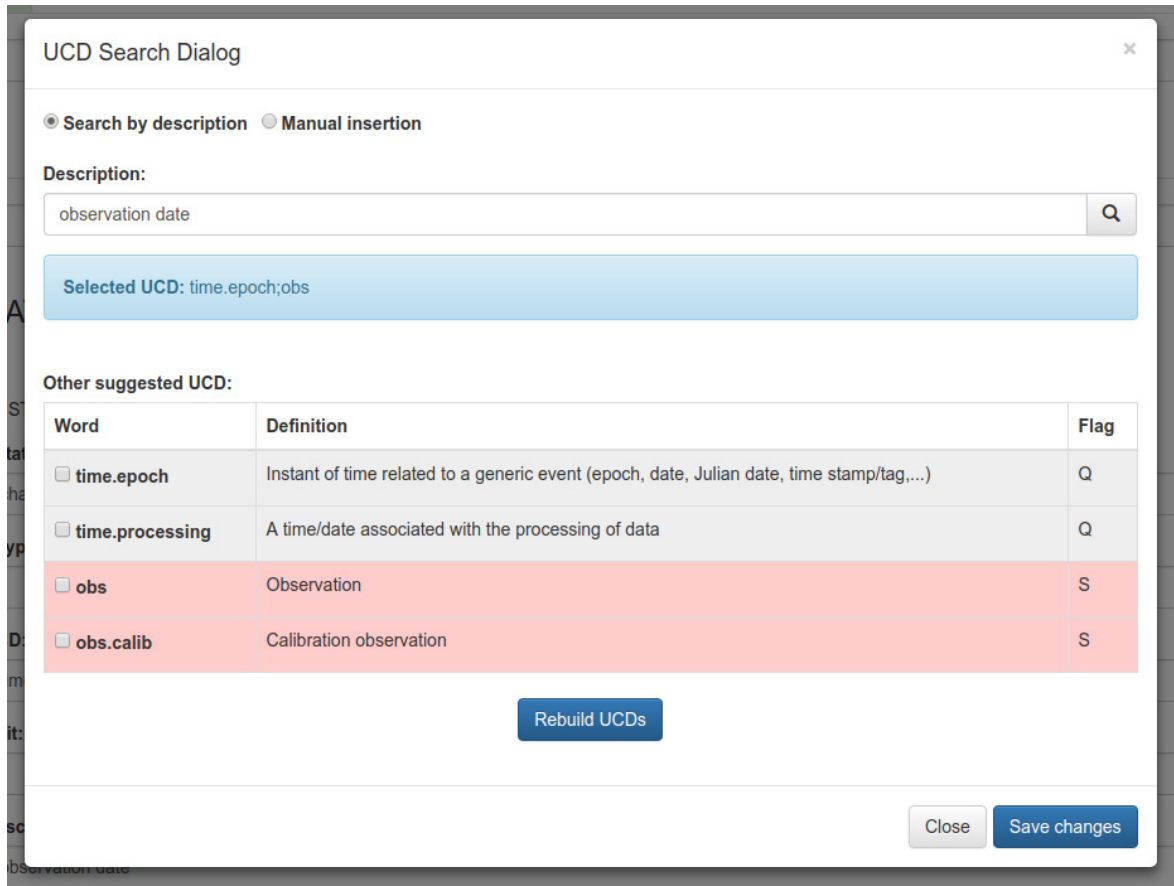


Figure 6: UCD search dialog using CDS services

## 5.5 Users management

When TASMAN is executed for the first time, username and password for the administrator user are set up.

The administrator can use the “Users management” button on the top menu bar for adding/removing other users.

## 6 Advanced configuration

### 6.1 Creating custom TAP\_SCHEMA versions

TASMAN builds TAP\_SCHEMA structures dynamically using XML configuration files inside the TASMAN-core module. In this way it is easy to support multiple TAP\_SCHEMA versions.

It is possible to add a custom version extending one on these XML configurations. The new file needs to be put inside the `src/main/resources/schema_definition` folder; then its name needs to be added to the list inside the `src/main/resources/core.properties` file. After recompiling the project the custom version will appear on the TAP\_SCHEMA version dropdown in the credential editing page.

Operations achievable by extending the configuration:

- adding new schemata, tables and columns;
- changing a property of a column (datatype, editability, ...);
- removing tables and columns.





## 6.1.1 Example: extending the TAP\_SCHEMA standard 1.1 version

```
<schema name="TAP_SCHEMA" version="MyCustomVersion" extends="1.1">
  <table name="columns">
    <!-- this will add a column called "my_custom_column"
    /-- to the TAP_SCHEMA columns table -->
    <column name="my_custom_column">
      <!-- data type must be in ADQL 2.0 datatype format -->
      <type>INTEGER</type>
      <!-- means the user can edit the content of this column -->
      <updatable>true</updatable>
      <!-- means this is not a standard column -->
      <standard>false</standard>
    </column>
    <!-- this will remove the arraysize column -->
    <remove name="arraysize" />
  </table>
</schema>
```