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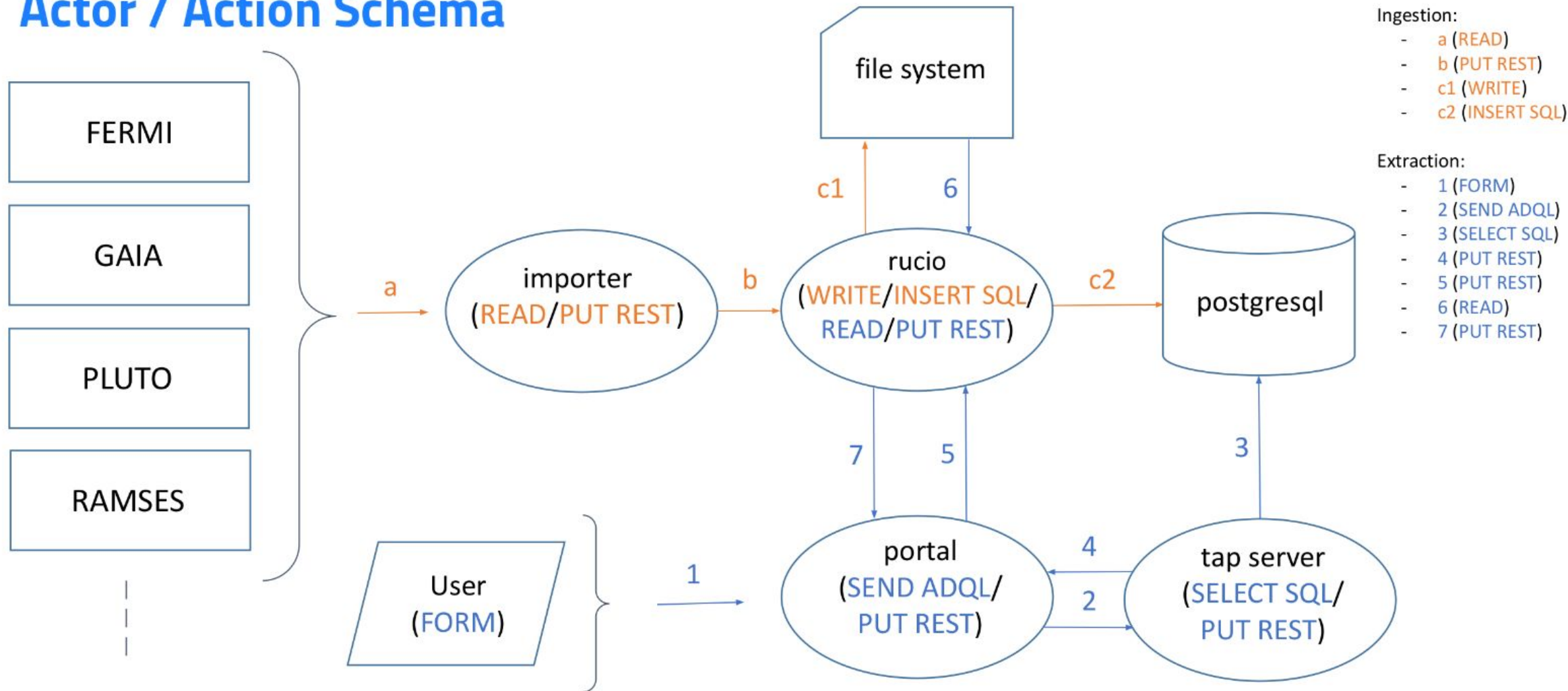
Centro Nazionale di Ricerca in HPC,  
Big Data and Quantum Computing

# *Introduction to metadata specification, data policy, archive interface presentation*

*Massimo Costantini*

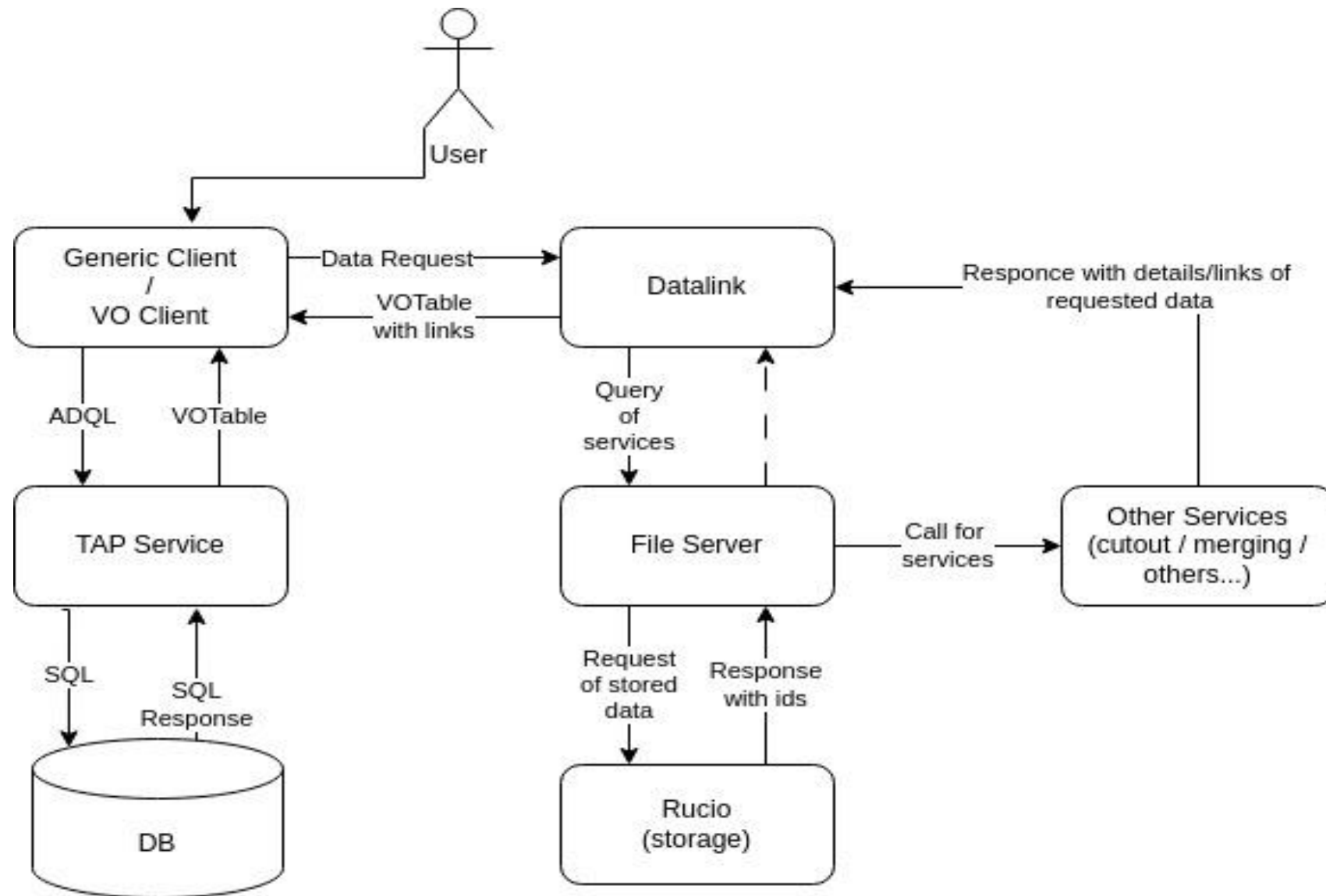
**Spoke 3 General Meeting, Elba 5-9 / 05, 2024**

## Actor / Action Schema



## Actor / Action Schema

This second point of view takes into account that the user could run the query via a generic client (Python code for example).



# Metadata

Data sources have to provide the list of metadata to be labelled, imported, filtered, queried and viewed as result.

Round tables are planned to fill out the Excel sheet together.

	A	B	C	D	E	F
1	NAME	LABEL	TO BE IMPORTED	TO BE FILTERED	TO BE QUERIED	IN RESULTS VIEW (DEFAULT)
2	NAXIS_HDU0		Y	N	N	N
3	EXTEND		Y	N	N	N
4	CHECKSUM_HDU0		Y	N	N	N
5	DATASUM_HDU0		Y	N	N	N
6	TELESCOP		Y	N	Y	Y
7	INSTRUME		Y	N	Y	Y
8	EQUINOX		Y	N	Y	Y
9	RADECSYS		Y	N	N	N
10	DATE		Y	N	Y	Y
11	DATE_OBS	Observation start date	Y	Y	Y	Y
12	DATE_END	Observation end date	Y	Y	Y	Y
13	TSTART	Start MET (s)	Y	Y	Y	Y
14	TSTOP	End MET (s)	Y	Y	Y	Y
15	TIMESYS		Y	N	N	N
16	TIMEUNIT		Y	N	N	N
17	GPS_OUT		Y	N	N	N
18	MJDREFI		Y	N	N	N
19	MJDREFF		Y	N	N	N
20	OBSERVER		Y	N	Y	Y
21	FILENAME		Y	N	Y	Y
22	ORIGIN		Y	N	N	N
23	CREATOR		Y	N	N	N

# jPortal

New portal with all aggregated data sources.

Users logged in get a token with a time expiration.

The screenshot shows a web browser window with the address bar displaying 'localhost:8084/ui/#/data/'. The page title is 'jPortal'. The user is logged in as 'Massimo Costantini'. The main content area is mostly blank, with a sidebar on the left containing a navigation menu. The sidebar menu includes 'Help', 'Settings', 'Observation' (a sub-section), 'Fermi', 'Gaia', 'Simulation' (another sub-section), 'Pluto', and 'Ramses'. Each item is represented by a folder icon.

# RAP

Integration with the Remote Authentication Portal permits to grant or revoke access to private data (Gaia).

RAP

https://sso.ia2.inaf.it/rap-ia2/?action=oauth2client

## Remote Authentication Portal

Image Credits & Copyright: Colombari/E.Recurt

### jPortal

Use the eduGAIN or OrCID Logo to Login or Register to RAP facility with your Institutional account.

Use these Logos to Login or Register to the RAP facility with your social identity

Use the IA2 Logo to Login if you have an account provided by IA2 or self registered

**Need help?** Please read our [User guide](#) and [FAQ](#).

[Privacy policy](#)

This software has been adapted by the IA2 team from the Remote Authentication Portal written by Franco Tinarelli at INAF-IRA.

Powered by IA2

# Fermi

Example of mandatory fields component.

Both fields have to be filled in to enable the search button.

The screenshot shows a web browser window with the URL `localhost:8084/ui/#/fermi`. The page title is "jPortal" and the user is logged in as "Massimo Costantini". The main content area is titled "Fermi" and contains a search form. The form has three tabs: "Search", "ADQL", and "Results". The "Search" tab is active. Below the tabs, there is a dropdown menu for "Vertical" and another for "Spacecraft". The "Spacecraft" dropdown is currently selected. Below these dropdowns, there are two mandatory fields: "\* Obs start date" and "\* Obs end date". Each date field has a calendar icon and a time selection field. To the right of each date field, there is a "Start MET (s)" and "Stop MET (s)" field, respectively. The "Search" button is located at the top left of the form area.

# ADQL

Editor to modify and resubmit the query.

The screenshot shows a web browser window with the URL `localhost:8084/ui/#/fermi`. The page title is "jPortal" and the user is logged in as "Massimo Costantini". The interface includes a sidebar with navigation options: "Help", "Settings", "Observation" (with sub-items "Fermi" and "Gaia"), and "Simulation" (with sub-items "Pluto" and "Ramses"). The main content area has tabs for "Search", "ADQL", and "Results". The "ADQL" tab is active, displaying a query editor with a rich text toolbar. The query text is:

```
SELECT *  
FROM Spacecraft  
WHERE ((dateObs > '2024-05-05 00:00:00.0000' AND dateEnd < '2024-05-06 00:00:00.0000') OR (dateObs <= '2024-05-05 00:00:00.0000' AND dateEnd >= '2024-05-05 00:00:00.0000') OR (dateObs <= '2024-05-06 00:00:00.0000' AND dateEnd >= '2024-05-06 00:00:00.0000'));
```



# Gaia

Due to the huge amount of data and the number of columns, performance could be a problem.

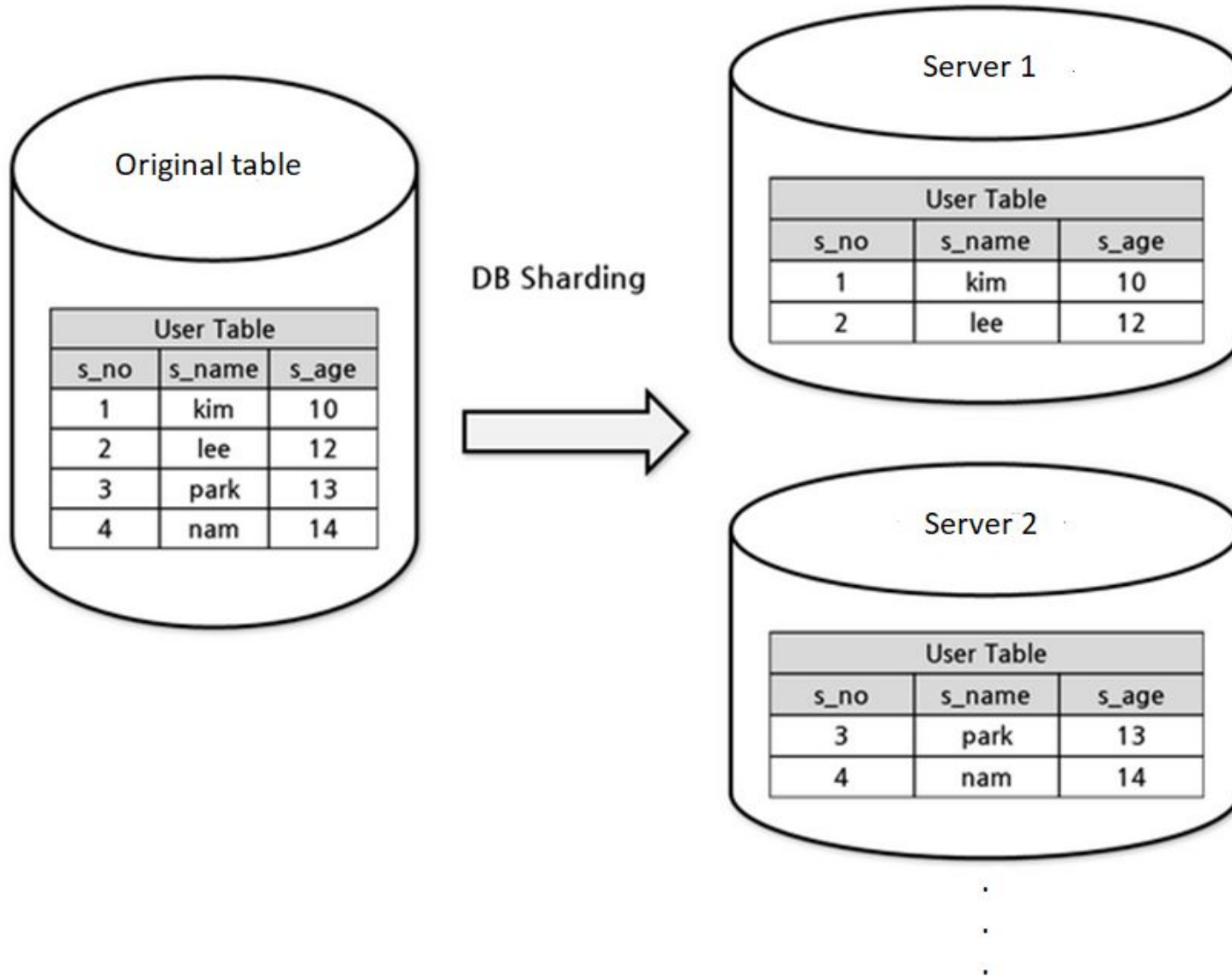
The screenshot shows a web browser window with the URL `localhost:8084/ui/#/gaia`. The application header includes a hamburger menu, the text "jPortal", and the user name "Massimo Costantini". A left sidebar contains navigation items: "Help", "Settings", "Observation" (with sub-items "Fermi" and "Gaia"), and "Simulation" (with sub-items "Pluto" and "Ramses"). The main content area has tabs for "Search", "ADQL", and "Results", with "Search" selected. A "Horizontal" dropdown menu is open, showing "CompleteSource" selected. Below this, there are several input fields and range selectors for parameters: "sourceId" (empty), "alpha" (Min: 1.61364, Max: 1.63109), "alphaStarError" (Min: 0.0119842, Max: 971.737), "delta" (Min: 0.389658, Max: 0.395537), "deltaError" (Min: 0.0101086, Max: 734.994), "muAlphaStar" (Min: -280.5, Max: 287.5), "muAlphaStarError" (Min: 0.0, Max: 206.8), "muDelta" (Min: -148.85, Max: 200.139), and "muDeltaError" (Min: 0.0, Max: 206.1). The bottom of the page shows the start of a parameter "nuEffLeadInAstro".

# Sharding

Indexes could be a bottleneck, better partitioning tables across multiple servers.

Tables can be fragmented by rows or by hash.

PostgreSQL has extensions (pg\_part and pg\_shard for example) to do that job.





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# Thanks for your attention!