



Professionelle Datenanalyse mit Open Source Software





Fahrplan



Vorstellung

Einstieg und Motivation

Vorstellung Architekturen und Open Source Tools

Fragen und Diskussion



Markus Suhr

*1987

M.Sc Angewandte Informatik / Medizininformatik

Universitätsmedizin Göttingen

2011 Applikationsbetreuer Lehr- u. Lernmanagementsysteme

2014 Systemadministrator, Software Entwickler

2017 Forschungsdatenmanagement, Data Warehousing

NextLytics AG

2022 Consultant, Teamleiter **Data Science & Engineering**



2014 - 2017

ILIAS
Open Source e-Learning

docu.ilias.de > Using ILIAS

Using ILIAS
Information about the use of ILIAS



Get Started
Using ILIAS
Development
Community
Repository

2017 -
2019

BMC Bioinformatics

Home About Articles Submission Guidelines Collections Join The Board [Submit manuscript](#)

Software | [Open access](#) | Published: 17 December 2020

Menoci: lightweight extensible web portal enhancing data management for biomedical research projects

M. Suhr [✉](mailto:msuhr@med.uni-goettingen.de) orcid.org/0000-0002-6307-3253¹, C. Lehmann¹, C. R. Bauer¹, T. Bender¹, C. Knopp¹, L. Freckmann¹, B. Öst Hansen¹, C. Henke¹, G. Aschenbrandt¹, L. K. Kühlborn¹, S. Rheinländer¹, L. Weber¹, B. Marzec¹, M. Hellkamp², P. Wieder², U. Sax¹, H. Kusch^{1,3 na1} & S. Y. Nussbeck^{1,4 na1}

BMC Bioinformatics 21, Article number: 582 (2020) | [Cite this article](#)

3087 Accesses | 8 Citations | 3 Altmetric | [Metrics](#)

2019 - 2021

GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN
UNIVERSITÄTSMEDIZIN GÖTTINGEN UMG
Department of Medical Informatics

FOSDEM 2020, Brussels

Spotlight on Free Software Building Blocks for a Secure Health Data Infrastructure

Marcel Parciak, Markus Suhr, Tibor Keszyüs, Dagmar Krefting

University Medical Center Göttingen
Department of Medical Informatics
Germany

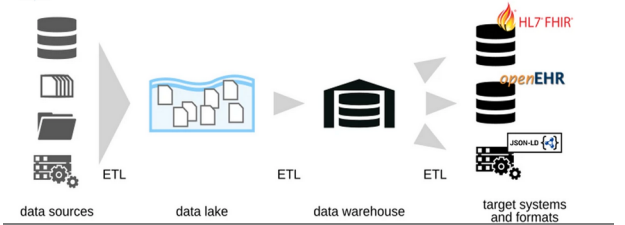
<http://mi.umg.eu>

Institut für Medizinische Informatik




Fig. 1

From: FAIRness through automation: development of an automated medical data integration infrastructure for FAIR health data in a maximum care university hospital



...seit 2022



ubuntu



PostgreSQL



Apache
Airflow



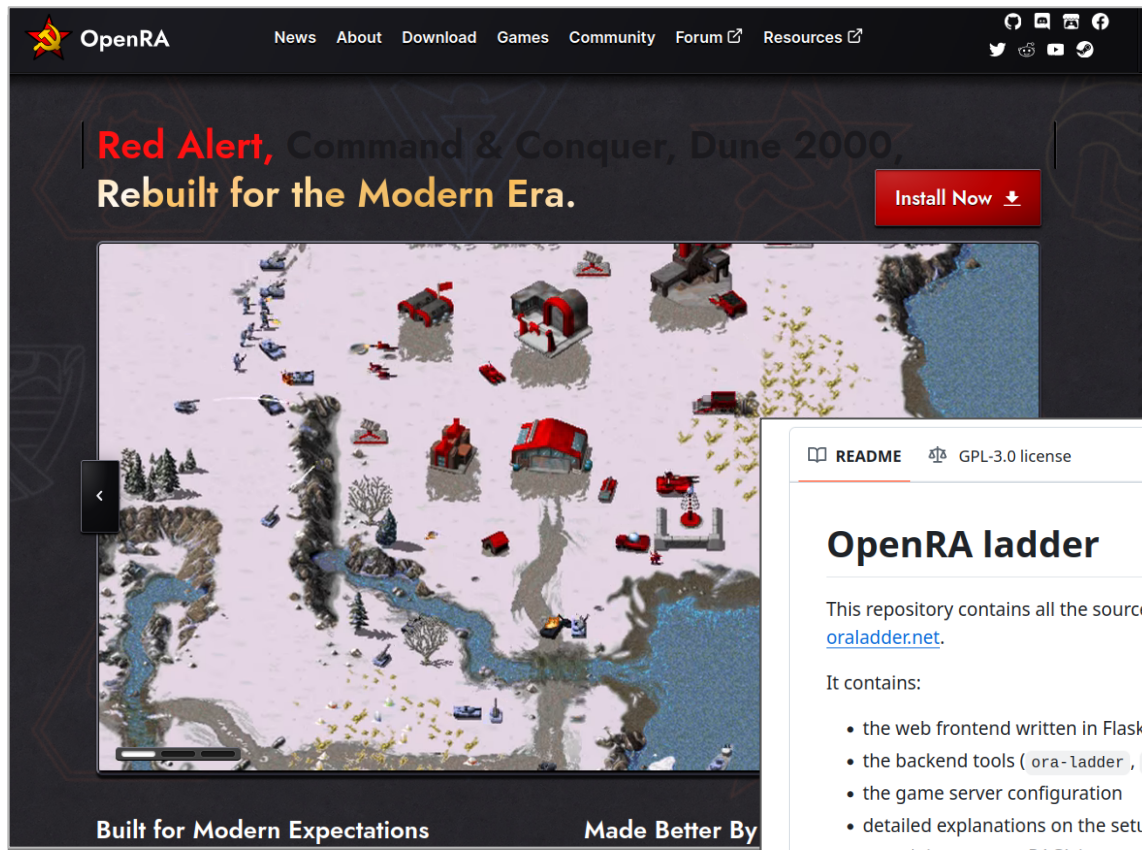
python™



databricks



...und Open Source nach Feierabend 🐱



The banner features the OpenRA logo in the top left, a navigation menu with links for News, About, Download, Games, Community, Forum, and Resources, and social media icons. The main text reads "Red Alert, Command & Conquer, Dune 2000, Rebuilt for the Modern Era." with an "Install Now" button. Below is a screenshot of a game map with a river and various units. At the bottom, it says "Built for Modern Expectations" and "Made Better By".

<https://www.openra.net>



The scoreboard is titled "OPENRA RED ALERT GLOBAL LEAGUE" and shows "Masters Finale playoffs (B05)". It includes a table of match results and a "Game records" table.

Match	Player	Score	Player
Semi-finals	Kav	3 - 2	Blackened
Semi-finals	not happy	3 - 0	Felix
3rd Place	Blackened	0 - 0	Felix
Final	Kav	3 - 2	not happy

Date	Map	Victorious	Defeated	Replay
2023-12-10 17:02:40	Pleasant Plains [RAGL-15]	Kav	Blackened	👍
2023-12-10 17:53:32	Bossman [RAGL-15]	Blackened	Kav	👍
2023-12-10 18:08:01	Cow Level [RAGL-15]	Blackened	Kav	👍
2023-12-10 18:19:04	Glittering Gully [RAGL-15]	Kav	Blackened	👍
2023-12-10 18:32:54	Dover [RAGL-15]	Kav	Blackened	👍

📖 README 📄 GPL-3.0 license

OpenRA ladder

This repository contains all the sources used by the OpenRA community competitive 1v1 ladder hosted on [oraladder.net](https://www.oraladder.net).

It contains:

- the web frontend written in Flask (Python)
- the backend tools (`ora-ladder` , `ora-replay`)
- the game server configuration
- detailed explanations on the setup
- a work-in-progress RAGL integration



Fahrplan



Vorstellung

Einstieg und Motivation

Vorstellung Architekturen und Open Source Tools

Fragen und Diskussion



Vokabeltest zum Einstieg

Datenbanken und Structured Query Language (SQL)

Docker, Git, DevOps

Continuous Integration / Continuous Delivery (CICD)

Data Warehouse

Automatisierung, Orchestrierung

Governance, Data Lineage



Wieso *professionell*?

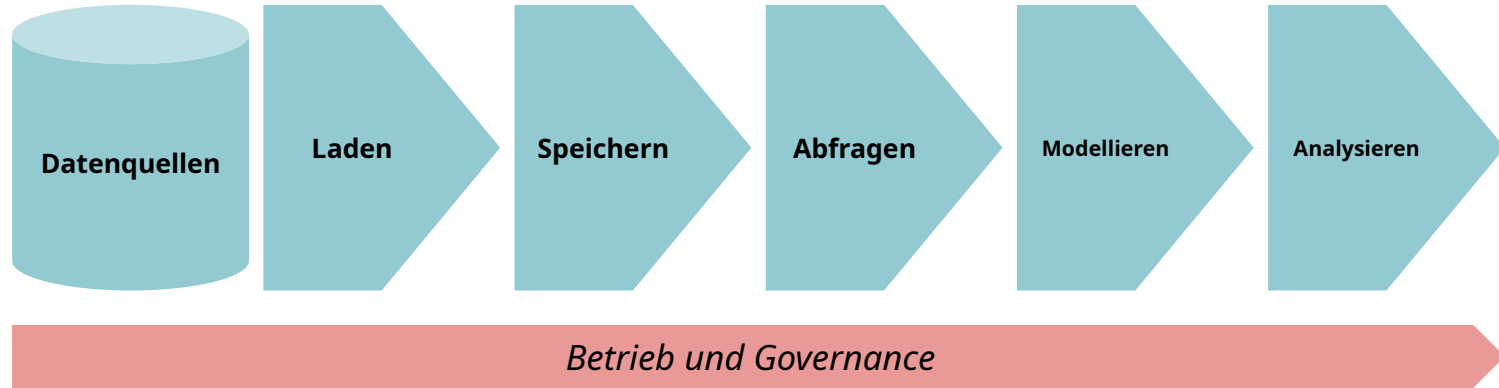
...eher als Qualitätsmerkmal gemeint, denn im Wortsinn:

Verarbeitung sollte automatisiert und reproduzierbar erfolgen,
Änderungen müssen nachvollziehbar sein, Verantwortlichkeiten und
Berechtigungen klar geregelt, (...)

Kurz: sämtliche Lehren aus Ingenieurwissenschaften und Software-
Entwicklung sollen auch auf Datenverarbeitung und Datenanalyse
angewendet werden



Grundbausteine der Datenanalyse



“Rohdaten”: EUR Wechselkurse
aus öffentlicher
Schnittstelle der
Europäischen Zentralbank

	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
1	KEY	FREQ	CURRENCY	CURRENCY_DENOM	EXR_TYPE	EXR_SUFFIX	TIME_PERIOD	OBS_VALUE	OBS_STATUS
2	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-13	1.02745	A
3	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-14	1.02232	A
4	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-17	1.0087	A
5	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-18	1.00915	A
6	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-19	1.01034	A
7	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-20	1.00873	A
8	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-21	1.00954	A
9	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-24	1.00216	A
10	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-25	1.00064	A
11	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-26	1.00172	A
12	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-27	0.99743	A
13	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-28	0.98464	A
14	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-31	0.97905	A
15	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-02-01	0.97085	A
16	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-02-02	0.9715	A
17	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-02-03	0.9746	A
18	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-02-04	0.98329	A
19	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-02-07	0.9761	A
20	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-02-08	0.99009	A
21	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-02-09	0.99318	A
22	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-02-10	0.9866	A
23	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-02-11	0.9799	A
24	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-02-14	0.98048	A
25	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-02-15	0.97759	A
26	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-02-16	0.9802	A
27	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-02-17	0.9917	A

Aggregieren

Analysieren

https://data-api.ecb.europa.eu/service/data/EXR/D..EUR.SP00.A?format=csvdata&start_date=2024-09-19

“Eingangsdaten” in
Datenbank: Täglich
abgerufene Wechselkurse
mit Zeitstempel der Ladung

Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
1	KEY	FREQ	CURRENCY	CURRENCY_DENOM	EXR_TYPE	EXR_SUFFIX	TIME_PERIOD
2	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00	A	2000-01-13
3	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR			
4	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR			
5	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR			
6	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	21		
7	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	22		
8	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	23		
9	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	24		
10	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	25		
11	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	26		
12	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	27		
13	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	28		
14	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	29		
15	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	30		
16	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	31		
17	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	32		
18	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	33		
19	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	34		
20	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	35		
21	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	36		
22	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	37		
23	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	38		
24	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	39		
25	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR			
26	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR			
27	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR			

exchange_rate_date	currency	currency_name	rate	loadtime
2024-09-18	HKD	Hong Kong dollar	8,669	2024-09-19 00:00:04.785
2024-09-18	GBP	UK pound sterling	0,842	2024-09-19 00:00:04.785
2024-09-18	DKK	Danish krone	7,461	2024-09-19 00:00:04.785
2024-09-18	CZK	Czech koruna	25,07	2024-09-19 00:00:04.785
2024-09-18	CNY	Chinese yuan renminbi	7,88	2024-09-19 00:00:04.785
2024-09-18	CHF	Swiss franc	0,939	2024-09-19 00:00:04.785
2024-09-18	CAD	Canadian dollar	1,512	2024-09-19 00:00:04.785
2024-09-18	BRL	Brazilian real	6,094	2024-09-19 00:00:04.785
2024-09-18	BGN	Bulgarian lev	1,956	2024-09-19 00:00:04.785
2024-09-18	AUD	Australian dollar	1,64	2024-09-19 00:00:04.785
2024-09-17	ZAR	South African rand	19,642	2024-09-18 00:00:05.051
2024-09-17	USD	US dollar	1,114	2024-09-18 00:00:05.051
2024-09-17	TRY	Turkish lira	37,914	2024-09-18 00:00:05.051
2024-09-17	THB	Thai baht	37,104	2024-09-18 00:00:05.051
2024-09-17	SGD	Singapore dollar	1,441	2024-09-18 00:00:05.051
2024-09-17	SEK	Swedish krona	11,324	2024-09-18 00:00:05.051
2024-09-17	RON	Romanian leu	4,974	2024-09-18 00:00:05.051
2024-09-17	PLN	Polish zloty	4,268	2024-09-18 00:00:05.051
2024-09-17	PHP	Philippine peso	61,966	2024-09-18 00:00:05.051

<https://data-api.ecb.europa.eu/service/data/EXR/D...EUR.S...>

“Normalisierte Daten“:
Bereinigt und für die
weitere Verarbeitung
aufbereitet; hier:
aktueller Wechselkurs

	Standard	Standard	Standard	Standard	Standard
1	KEY	FREQ	CURRENCY	CURRENCY_DENOM	EXR_TYPE
2	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
3	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
4	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
5	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
6	EXR.D.ARS.EUR.SP00.A	D			
7	EXR.D.ARS.EUR.SP00.A	D	exchange_rate_date	currency	
8	EXR.D.ARS.EUR.SP00.A	D	21	2024-09-18	HKD
9	EXR.D.ARS.EUR.SP00.A	D	22	2024-09-18	GBP
10	EXR.D.ARS.EUR.SP00.A	D	23	2024-09-18	DKK
11	EXR.D.ARS.EUR.SP00.A	D	24	2024-09-18	CZK
12	EXR.D.ARS.EUR.SP00.A	D	25	2024-09-18	CNY
13	EXR.D.ARS.EUR.SP00.A	D	26	2024-09-18	CHF
14	EXR.D.ARS.EUR.SP00.A	D	27	2024-09-18	CAD
15	EXR.D.ARS.EUR.SP00.A	D	28	2024-09-18	BRL
16	EXR.D.ARS.EUR.SP00.A	D	29	2024-09-18	BGN
17	EXR.D.ARS.EUR.SP00.A	D	30	2024-09-18	AUD
18	EXR.D.ARS.EUR.SP00.A	D	31	2024-09-17	ZAR
19	EXR.D.ARS.EUR.SP00.A	D	32	2024-09-17	USD
20	EXR.D.ARS.EUR.SP00.A	D	33	2024-09-17	TRY
21	EXR.D.ARS.EUR.SP00.A	D	34	2024-09-17	THB
22	EXR.D.ARS.EUR.SP00.A	D	35	2024-09-17	SGD
23	EXR.D.ARS.EUR.SP00.A	D	36	2024-09-17	SEK
24	EXR.D.ARS.EUR.SP00.A	D	37	2024-09-17	RON
25	EXR.D.ARS.EUR.SP00.A	D	38	2024-09-17	PLN
26	EXR.D.ARS.EUR.SP00.A	D	39	2024-09-17	PHP

<https://data-api.ecb.europa.eu/serv>

AZ currency	AZ currency_name			
1	AUD	Australian dollar		200
2	BGN	Bulgarian lev		2024-09-19 02:00:08.639 +0200
3	BRL	Brazilian real	6,094	2024-09-19 02:00:08.639 +0200
4	CAD	Canadian dollar	1,512	2024-09-19 02:00:08.639 +0200
5	CHF	Swiss franc	0,939	2024-09-19 02:00:08.639 +0200
6	CNY	Chinese yuan renminbi	7,88	2024-09-19 02:00:08.639 +0200
7	CZK	Czech koruna	25,07	2024-09-19 02:00:08.639 +0200
8	DKK	Danish krone	7,461	2024-09-19 02:00:08.639 +0200
9	GBP	UK pound sterling	0,842	2024-09-19 02:00:08.639 +0200
10	HKD	Hong Kong dollar	8,669	2024-09-19 02:00:08.639 +0200
11	HUF	Hungarian forint	394,25	2024-09-19 02:00:08.639 +0200
12	IDR	Indonesian rupiah	17.032,01	2024-09-19 02:00:08.639 +0200
13	ILS	Israeli shekel	4,192	2024-09-19 02:00:08.639 +0200
14	INR	Indian rupee	93,132	2024-09-19 02:00:08.639 +0200
15	ISK	Iceland krona	152,30	2024-09-19 02:00:08.639 +0200
16	JPY	Japanese yen	157,94	2024-09-19 02:00:08.639 +0200
17	KRW	Korean won (Republic)	1.473,65	2024-09-19 02:00:08.639 +0200
18	MSD	Markus Dollar	1,00	2024-09-19 02:00:08.639 +0200
19	MXN	Mexican peso	21,24	2024-09-19 02:00:08.639 +0200
20	MYR	Malaysian ringgit	4,721	2024-09-19 02:00:08.639 +0200
21	NOK	Norwegian krone	11,775	2024-09-19 02:00:08.639 +0200
22	NZD	New Zealand dollar	1,788	2024-09-19 02:00:08.639 +0200
23	PHP	Philippine peso	61,988	2024-09-19 02:00:08.639 +0200
24	PLN	Polish zloty	4,27	2024-09-19 02:00:08.639 +0200
25	RON	Romanian leu	4,975	2024-09-19 02:00:08.639 +0200
26	SEK	Swedish krona	11,324	2024-09-19 02:00:08.639 +0200
27	SGD	Singapore dollar	1,44	2024-09-19 02:00:08.639 +0200
28	THB	Thai baht	37,015	2024-09-19 02:00:08.639 +0200
29	TRY	Turkish lira	37,943	2024-09-19 02:00:08.639 +0200
30	USD	US dollar	1,112	2024-09-19 02:00:08.639 +0200
31	ZAR	South African rand	19,553	2024-09-19 02:00:08.639 +0200

“Reporting Daten”: für spezifische Fragestellung aufbereitet, hier: monatlicher Durchschnitt der Wechselkurse

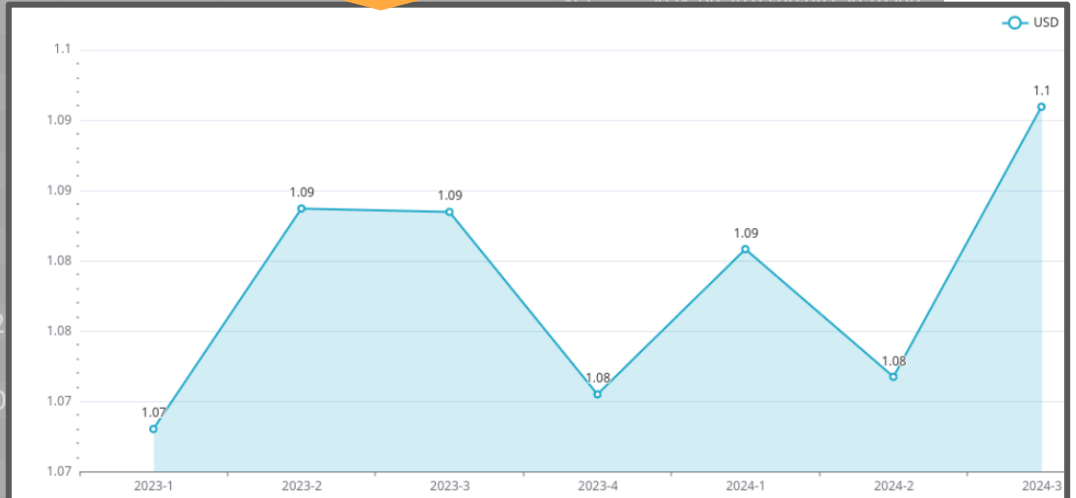
	Standard	Standard	Standard	Star
1	KEY	FREQ	CURRENCY	CURI
2	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
3	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
4	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
5	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
6	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
7	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
8	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
9	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
10	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
11	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
12	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
13	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
14	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
15	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
16	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
17	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
18	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
19	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
20	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
21	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
22	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
23	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
24	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
25	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
26	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR
27	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR

	A-Z	A-Z	A-Z	C-V
	date_yn	currency	currency_nar	avg
1	2024-9	AUD	Australian dollar	1,648
2	2024-8	AUD	Australian dollar	1,656
3	2024-7	AUD	Australian dollar	1,626
4	2024-6	AUD	Australian dollar	1,621
5	2024-5	AUD	Australian dollar	1,632
6	2024-4	AUD	Australian dollar	1,647
7	2024-3	AUD	Australian dollar	1,659
8	2024-2	AUD	Australian dollar	1,653
9	2024-1	AUD	Australian dollar	1,642
10	2023-12	AUD	Australian dollar	1,632
11	2023-11	AUD	Australian dollar	1,663
12	2023-10	AUD	Australian dollar	1,664
13	2023-9	AUD	Australian dollar	1,662
14	2023-8	AUD	Australian dollar	1,682
15	2023-7	AUD	Australian dollar	1,642
16	2023-6	AUD	Australian dollar	1,616
17	2023-5	AUD	Australian dollar	1,635

	estamp
1	2024-09-19 02:00:08.639 +0200
2	2024-09-19 02:00:08.639 +0200
3	2024-09-19 02:00:08.639 +0200
4	2024-09-19 02:00:08.639 +0200
5	2024-09-19 02:00:08.639 +0200
6	2024-09-19 02:00:08.639 +0200
7	2024-09-19 02:00:08.639 +0200
8	2024-09-19 02:00:08.639 +0200
9	2024-09-19 02:00:08.639 +0200
10	2024-09-19 02:00:08.639 +0200
11	2024-09-19 02:00:08.639 +0200
12	2024-09-19 02:00:08.639 +0200
13	2024-09-19 02:00:08.639 +0200
14	2024-09-19 02:00:08.639 +0200
15	2024-09-19 02:00:08.639 +0200
16	2024-09-19 02:00:08.639 +0200
17	2024-09-19 02:00:08.639 +0200
18	2024-09-19 02:00:08.639 +0200
19	2024-09-19 02:00:08.639 +0200
20	2024-09-19 02:00:08.639 +0200
21	2024-09-19 02:00:08.639 +0200
22	2024-09-19 02:00:08.639 +0200
23	2024-09-19 02:00:08.639 +0200
24	2024-09-19 02:00:08.639 +0200
25	2024-09-19 02:00:08.639 +0200
26	2024-09-19 02:00:08.639 +0200
27	2024-09-19 02:00:08.639 +0200
28	2024-09-19 02:00:08.639 +0200
29	2024-09-19 02:00:08.639 +0200
30	2024-09-19 02:00:08.639 +0200
31	2024-09-19 02:00:08.639 +0200

<https://data-api.ecb.europa.eu/ser>

“Analyse”: für die menschliche Interpretation aufbereitete Darstellung, hier: Entwicklung durchschnittlicher EUR-USD Wechselkurse pro Quartal



Standard	Standard	Standard	Standard	Standard
1 KEY	FREQ	CURRENCY	CURR	
2 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
3 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
4 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
5 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
6 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
7 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
8 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
9 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
10 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
11 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
12 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
13 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
14 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
15 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
16 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
17 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
18 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
19 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
20 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
21 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
22 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
23 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
24 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
25 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
26 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	
27 EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	

Az	currency	Az	currency_name	Az	rate	Az	update_timestamp	
1	AUD		Australian dollar		1,64		2024-09-19 02:00:08.639 +0200	
2	BGN		Bulgarian lev		1,639		2024-09-19 02:00:08.639 +0200	
3	BRL		Brazilian real		1,639		2024-09-19 02:00:08.639 +0200	
4	CAD		Canadian dollar		1,639		2024-09-19 02:00:08.639 +0200	
1	Az	date_ym	Az	currency	Az	rate	Az	update_timestamp
1	2024-9		AUD		1,642		2024-09-19 02:00:08.639 +0200	
2	2024-8		AUD		1,616		2024-09-19 02:00:08.639 +0200	
3	2024-7		AUD		1,635		2024-09-19 02:00:08.639 +0200	
4	2024-6		AUD		1,642		2024-09-19 02:00:08.639 +0200	
5	2024-5		AUD		1,616		2024-09-19 02:00:08.639 +0200	
6	2024-4		AUD		1,635		2024-09-19 02:00:08.639 +0200	
7	2024-3		AUD		1,642		2024-09-19 02:00:08.639 +0200	
8	2024-2		AUD		1,616		2024-09-19 02:00:08.639 +0200	
9	2024-1		AUD		1,635		2024-09-19 02:00:08.639 +0200	
10	2023-12		AUD		1,642		2024-09-19 02:00:08.639 +0200	
11	2023-11		AUD		1,616		2024-09-19 02:00:08.639 +0200	
12	2023-10		AUD		1,635		2024-09-19 02:00:08.639 +0200	
13	2023-9		AUD		1,642		2024-09-19 02:00:08.639 +0200	
14	2023-8		AUD		1,616		2024-09-19 02:00:08.639 +0200	
15	2023-7		AUD		1,635		2024-09-19 02:00:08.639 +0200	
16	2023-6		AUD		1,642		2024-09-19 02:00:08.639 +0200	
17	2023-5		AUD		1,616		2024-09-19 02:00:08.639 +0200	
30	2024-09-17	PHP	USD	US dollar	1,112		2024-09-19 02:00:08.639 +0200	
31			ZAR	South African rand	19,553		2024-09-19 02:00:08.639 +0200	

<https://data-api.ecb.europa.eu/serv>

Datenquellen

Laden

Speichern

Abfragen

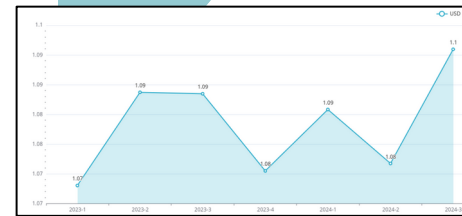
Modellieren

Analysieren

Standard	Standard	Standard	Standard	Standard	Standard
KEY	FREQ	CURRENCY	CURRENCY_DENOM	EXR_TYPE	EXR_SR
1	EXR.D	ARS	EUR	SPPO	A
2	EXR.D	ARS	EUR	SPPO	A
3	EXR.D	ARS	EUR	SPPO	A
4	EXR.D	ARS	EUR	SPPO	A
5	EXR.D	ARS	EUR	SPPO	A
6	EXR.D	ARS	EUR	SPPO	A
7	EXR.D	ARS	EUR	SPPO	A
8	EXR.D	ARS	EUR	SPPO	A
9	EXR.D	ARS	EUR	SPPO	A
10	EXR.D	ARS	EUR	SPPO	A
11	EXR.D	ARS	EUR	SPPO	A
12	EXR.D	ARS	EUR	SPPO	A
13	EXR.D	ARS	EUR	SPPO	A
14	EXR.D	ARS	EUR	SPPO	A
15	EXR.D	ARS	EUR	SPPO	A
16	EXR.D	ARS	EUR	SPPO	A
17	EXR.D	ARS	EUR	SPPO	A
18	EXR.D	ARS	EUR	SPPO	A
19	EXR.D	ARS	EUR	SPPO	A
20	EXR.D	ARS	EUR	SPPO	A
21	EXR.D	ARS	EUR	SPPO	A
22	EXR.D	ARS	EUR	SPPO	A
23	EXR.D	ARS	EUR	SPPO	A
24	EXR.D	ARS	EUR	SPPO	A
25	EXR.D	ARS	EUR	SPPO	A
26	EXR.D	ARS	EUR	SPPO	A
27	EXR.D	ARS	EUR	SPPO	A
28	EXR.D	ARS	EUR	SPPO	A
29	EXR.D	ARS	EUR	SPPO	A
30	EXR.D	ARS	EUR	SPPO	A
31	EXR.D	ARS	EUR	SPPO	A
32	EXR.D	ARS	EUR	SPPO	A
33	EXR.D	ARS	EUR	SPPO	A
34	EXR.D	ARS	EUR	SPPO	A
35	EXR.D	ARS	EUR	SPPO	A
36	EXR.D	ARS	EUR	SPPO	A
37	EXR.D	ARS	EUR	SPPO	A
38	EXR.D	ARS	EUR	SPPO	A
39	EXR.D	ARS	EUR	SPPO	A
40	EXR.D	ARS	EUR	SPPO	A
41	EXR.D	ARS	EUR	SPPO	A
42	EXR.D	ARS	EUR	SPPO	A
43	EXR.D	ARS	EUR	SPPO	A
44	EXR.D	ARS	EUR	SPPO	A
45	EXR.D	ARS	EUR	SPPO	A
46	EXR.D	ARS	EUR	SPPO	A
47	EXR.D	ARS	EUR	SPPO	A
48	EXR.D	ARS	EUR	SPPO	A
49	EXR.D	ARS	EUR	SPPO	A
50	EXR.D	ARS	EUR	SPPO	A
51	EXR.D	ARS	EUR	SPPO	A
52	EXR.D	ARS	EUR	SPPO	A
53	EXR.D	ARS	EUR	SPPO	A
54	EXR.D	ARS	EUR	SPPO	A
55	EXR.D	ARS	EUR	SPPO	A
56	EXR.D	ARS	EUR	SPPO	A
57	EXR.D	ARS	EUR	SPPO	A
58	EXR.D	ARS	EUR	SPPO	A
59	EXR.D	ARS	EUR	SPPO	A
60	EXR.D	ARS	EUR	SPPO	A
61	EXR.D	ARS	EUR	SPPO	A
62	EXR.D	ARS	EUR	SPPO	A
63	EXR.D	ARS	EUR	SPPO	A
64	EXR.D	ARS	EUR	SPPO	A
65	EXR.D	ARS	EUR	SPPO	A
66	EXR.D	ARS	EUR	SPPO	A
67	EXR.D	ARS	EUR	SPPO	A
68	EXR.D	ARS	EUR	SPPO	A
69	EXR.D	ARS	EUR	SPPO	A
70	EXR.D	ARS	EUR	SPPO	A
71	EXR.D	ARS	EUR	SPPO	A
72	EXR.D	ARS	EUR	SPPO	A
73	EXR.D	ARS	EUR	SPPO	A
74	EXR.D	ARS	EUR	SPPO	A
75	EXR.D	ARS	EUR	SPPO	A
76	EXR.D	ARS	EUR	SPPO	A
77	EXR.D	ARS	EUR	SPPO	A
78	EXR.D	ARS	EUR	SPPO	A
79	EXR.D	ARS	EUR	SPPO	A
80	EXR.D	ARS	EUR	SPPO	A
81	EXR.D	ARS	EUR	SPPO	A
82	EXR.D	ARS	EUR	SPPO	A
83	EXR.D	ARS	EUR	SPPO	A
84	EXR.D	ARS	EUR	SPPO	A
85	EXR.D	ARS	EUR	SPPO	A
86	EXR.D	ARS	EUR	SPPO	A
87	EXR.D	ARS	EUR	SPPO	A
88	EXR.D	ARS	EUR	SPPO	A
89	EXR.D	ARS	EUR	SPPO	A
90	EXR.D	ARS	EUR	SPPO	A
91	EXR.D	ARS	EUR	SPPO	A
92	EXR.D	ARS	EUR	SPPO	A
93	EXR.D	ARS	EUR	SPPO	A
94	EXR.D	ARS	EUR	SPPO	A
95	EXR.D	ARS	EUR	SPPO	A
96	EXR.D	ARS	EUR	SPPO	A
97	EXR.D	ARS	EUR	SPPO	A
98	EXR.D	ARS	EUR	SPPO	A
99	EXR.D	ARS	EUR	SPPO	A
100	EXR.D	ARS	EUR	SPPO	A

currency	currency_name	rate	update_timestamp
AUD	Australian dollar	1.64	2024-09-19 02:00:08.639+0200
BGN	Bulgarian lev	1.956	2024-09-19 02:00:08.639+0200
BRL	Brazilian real	6.094	2024-09-19 02:00:08.639+0200
CAD	Canadian dollar	1.391	2024-09-19 02:00:08.639+0200
CHF	Swiss franc	0.939	2024-09-19 02:00:08.639+0200
CNY	Chinese yuan renminbi	7.88	2024-09-19 02:00:08.639+0200
CZK	Czech koruna	25.07	2024-09-19 02:00:08.639+0200
DKK	Danish krone	7.461	2024-09-19 02:00:08.639+0200
GBP	UK pound sterling	0.842	2024-09-19 02:00:08.639+0200
HKD	Hong Kong dollar	8.669	2024-09-19 02:00:08.639+0200
HUF	Hungarian forint	394.25	2024-09-19 02:00:08.639+0200
IDR	Indonesian rupiah	17021.21	2024-09-19 02:00:08.639+0200
ILS	Israeli sheqel	4.192	2024-09-19 02:00:08.639+0200
INR	Indian rupee	93.132	2024-09-19 02:00:08.639+0200
ISK	Icelandic krona	192.10	2024-09-19 02:00:08.639+0200
JPY	Japanese yen	157.94	2024-09-19 02:00:08.639+0200
KRW	Korean won (W0910)	1479.65	2024-09-19 02:00:08.639+0200
MXN	Mexican peso	21.24	2024-09-19 02:00:08.639+0200
MYR	Malaysian ringgit	4.291	2024-09-19 02:00:08.639+0200
NOK	Norwegian krona	11.775	2024-09-19 02:00:08.639+0200
NZD	New Zealand dollar	1.788	2024-09-19 02:00:08.639+0200
PHP	Philippine peso	67.988	2024-09-19 02:00:08.639+0200
PLN	Polish zloty	4.27	2024-09-19 02:00:08.639+0200
RON	Romanian leu	4.275	2024-09-19 02:00:08.639+0200
SEK	Swedish krona	11.334	2024-09-19 02:00:08.639+0200
SGD	Singapore dollar	1.44	2024-09-19 02:00:08.639+0200
THB	Thai baht	37.095	2024-09-19 02:00:08.639+0200
TRY	Turkish lira	37.943	2024-09-19 02:00:08.639+0200
USD	US dollar	1.112	2024-09-19 02:00:08.639+0200
ZAR	South African rand	19.553	2024-09-19 02:00:08.639+0200

date_yn	currency	currency_nar	avg
2024-9	AUD	Australian dollar	1,648
2024-8	AUD	Australian dollar	1,626
2024-7	AUD	Australian dollar	1,626
2024-6	AUD	Australian dollar	1,621
2024-5	AUD	Australian dollar	1,632
2024-4	AUD	Australian dollar	1,647
2024-3	AUD	Australian dollar	1,659
2024-2	AUD	Australian dollar	1,653
2024-1	AUD	Australian dollar	1,642
2023-12	AUD	Australian dollar	1,632
2023-11	AUD	Australian dollar	1,663
2023-10	AUD	Australian dollar	1,664
2023-9	AUD	Australian dollar	1,662
2023-8	AUD	Australian dollar	1,682
2023-7	AUD	Australian dollar	1,642
2023-6	AUD	Australian dollar	1,616
2023-5	AUD	Australian dollar	1,635



Datenquellen

Laden

Speichern

Abfragen

Modellieren

Analysieren

Betrieb und Governance

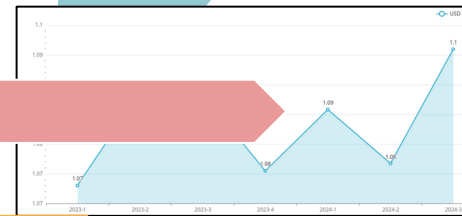
Alle Lade- und Transformationsschritte sollen automatisiert und reproduzierbar ausgeführt werden - und wenn etwas nicht funktioniert, will ich automatisch informiert werden

Standard	Standard	Standard	Standard	Standard	Standard
1	KEY				
2	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
3	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
4	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
5	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
6	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
7	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
8	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
9	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
10	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
11	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
12	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
13	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
14	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
15	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
16	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
17	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
18	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
19	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
20	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
21	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
22	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
23	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
24	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
25	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
26	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
27	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
28	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
29	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00
30	EXR.D.ARS.EUR.SP00.A	D	ARS	EUR	SP00

date	currency	currency_name	rate	loadtime
2024-09-18	HKD	Hong Kong dollar	8,669	2024-09-19 00:00:04,785
2024-09-18	GBP	UK pound sterling	0,842	2024-09-19 00:00:04,785
2024-09-18	DKK	Danish kroner	7,461	2024-09-19 00:00:04,785
2024-09-18	CZK	Czech koruna	25,07	2024-09-19 00:00:04,785
2024-09-18	CNY	Chinese yuan renminbi	7,88	2024-09-19 00:00:04,785
2024-09-18	CHF	Swiss franc	0,939	2024-09-19 00:00:04,785
2024-09-18	CAD	Canadian dollar	1,572	2024-09-19 00:00:04,785
2024-09-18	BRL	Brazilian real	6,094	2024-09-19 00:00:04,785
2024-09-18	BGN	Bulgarian lev	1,956	2024-09-19 00:00:04,785

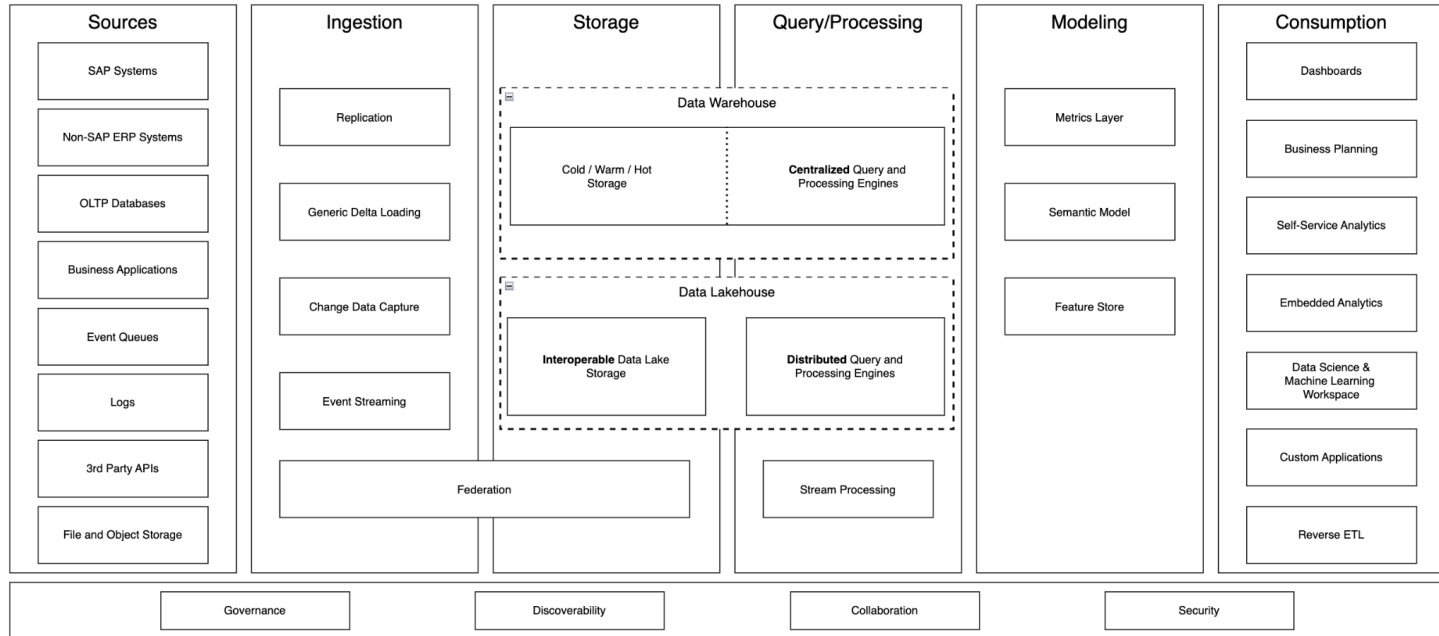
currency	currency_name	rate	update_timestamp
AUD	Australian dollar	1,656	2024-09-19 02:00:08,639
BGN	Bulgarian lev	1,956	2024-09-19 02:00:08,639
BRL	Brazilian real	6,094	2024-09-19 02:00:08,639
CAD	Canadian dollar	1,572	2024-09-19 02:00:08,639
CHF	Swiss franc	0,939	2024-09-19 02:00:08,639
CNY	Chinese yuan renminbi	7,88	2024-09-19 02:00:08,639

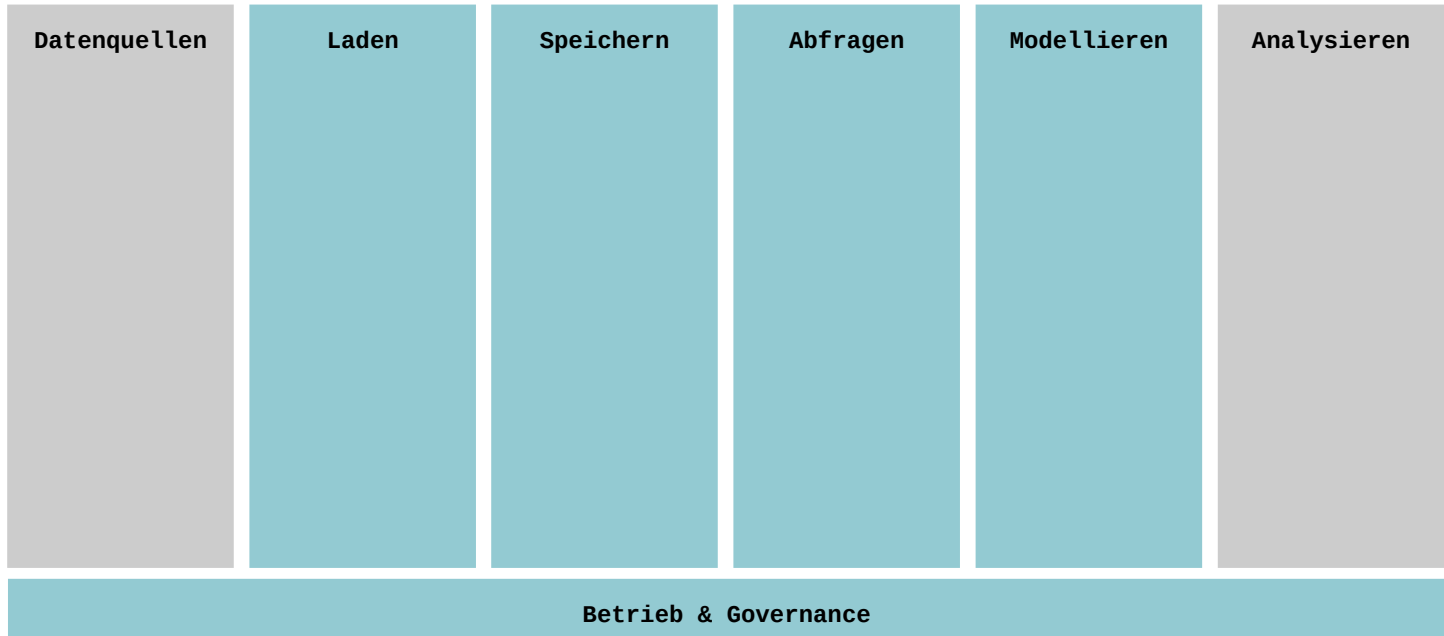
date_yr	currency	currency_nar	avg
2024-9	AUD	Australian dollar	1,648
2024-8	AUD	Australian dollar	1,656
2024-7	AUD	Australian dollar	1,626
2024-6	AUD	Australian dollar	1,621
2024-5	AUD	Australian dollar	1,632
2024-4	AUD	Australian dollar	1,647



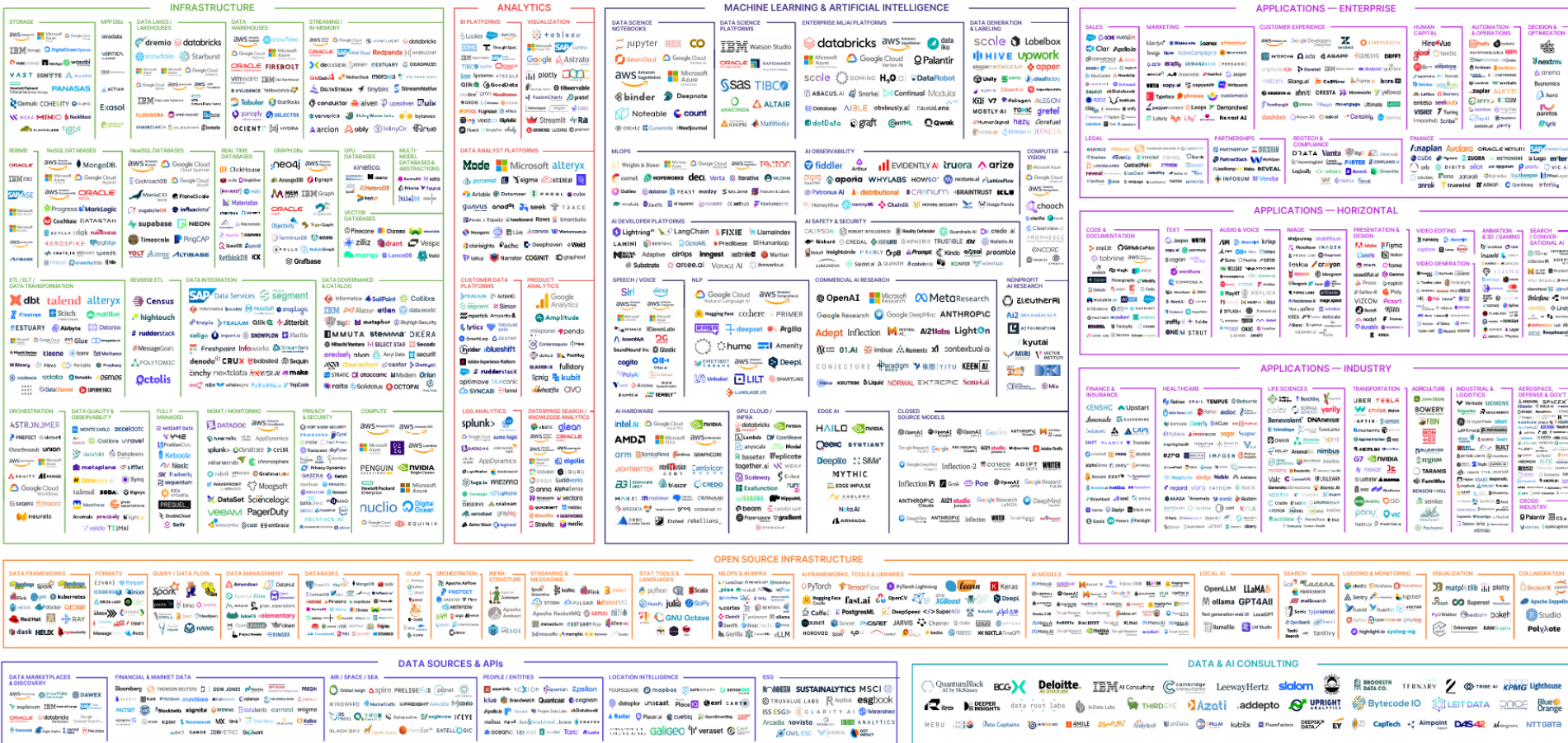
currency	currency_name	rate	update_timestamp
INR	Indian rupee	93,132	2024-09-19 02:00:08,639
IDR	Indonesian rupiah	152,20	2024-09-19 02:00:08,639
JPY	Japanese yen	157,34	2024-09-19 02:00:08,639
KRW	South Korean won (Republic)	1,073,65	2024-09-19 02:00:08,639
MXN	Mexican peso	1,69	2024-09-19 02:00:08,639
MYR	Malaysian ringgit	4,201	2024-09-19 02:00:08,639
NOK	Norwegian krone	7,22	2024-09-19 02:00:08,639
NZD	New Zealand dollar	1,61	2024-09-19 02:00:08,639
PHP	Philippine peso	7,61	2024-09-19 02:00:08,639
PLN	Polish zloty	4,074	2024-09-18 00:00:00,000
RON	Romanian leu	4,754	2024-09-18 00:00:00,000
SEK	Swedish krona	11,324	2024-09-18 00:00:00,000
THB	Thai baht	36,76	2024-09-18 00:00:00,000
TRY	Turkish lira	29,06	2024-09-18 00:00:00,000
USD	US dollar	1,000	2024-09-18 00:00:00,000
ZAR	South African rand	18,18	2024-09-18 00:00:00,000

Funktionales Spektrum einer maximal ausgebauten Datenanalyse-Plattform



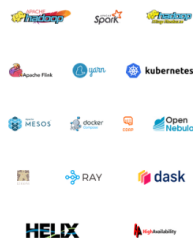


THE 2024 MAD (MACHINE LEARNING, ARTIFICIAL INTELLIGENCE & DATA) LANDSCAPE



Open Source Infrastructure

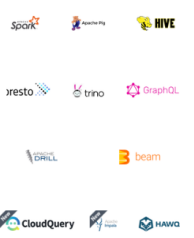
Data Frameworks



Formats



Query/Data Flow



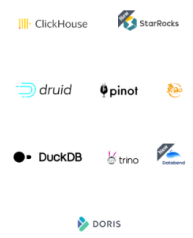
Data Management



Databases



OLAP



Orchestration



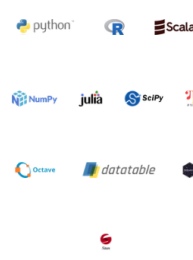
Infrastructure



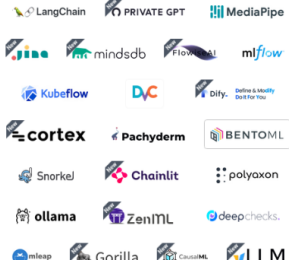
Streaming & Messaging



Stat Languages



MLOps & AI Infra



AI Frameworks, Tools & Libraries



AI Models & Architectures



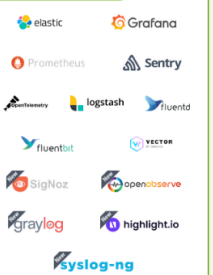
Search



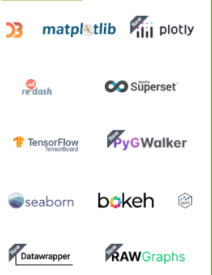
Local AI



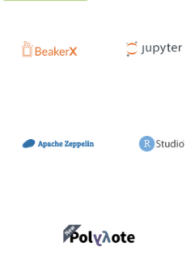
Logging & Monitoring



Visualization



Collaboration





Fahrplan



Vorstellung

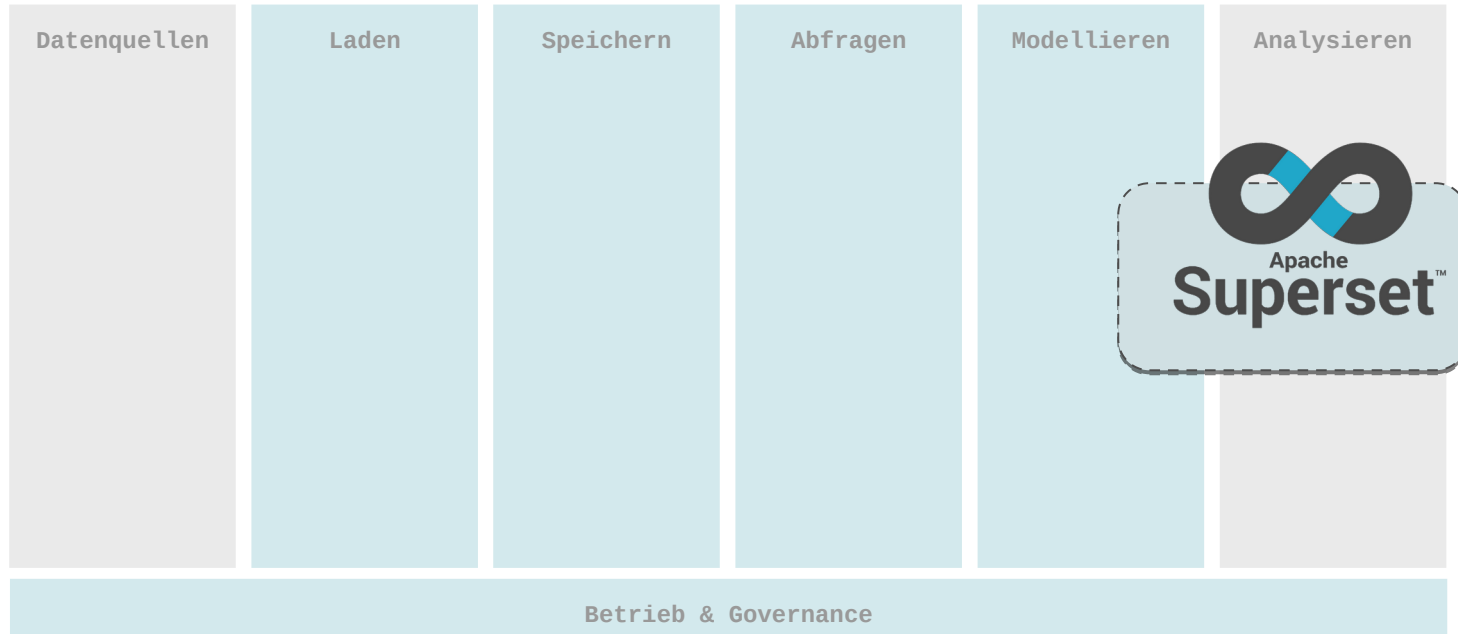
Einstieg und Motivation

Vorstellung Architekturen und Open Source Tools

Fragen und Diskussion



Datenanalyse und Visualisierung



Untitled Query 1 x

Untitled Query 2 x



DATABASE

postgresql Nextlytics Lottery Database (...)

SCHEMA

public

SEE TABLE SCHEMA

eur_exchange_rates x

eur_exchange_rates

exchange_rate_date	DATE
currency	VARCHAR
currency_name	VARCHAR
rate	NUMERIC
_loadtime	TIMESTAMP

```

1 SELECT extract(year from exchange_rate_date) || '-' || extract(quarter from exchange_rate_date) as _quarter,
2 currency,
3 AVG(rate)
4 FROM eur_exchange_rates
5 where currency='USD'
6 GROUP BY
7 extract(year from exchange_rate_date),
8 extract(quarter from exchange_rate_date),
9 currency
10 order by 3, 1 desc, 2 desc;

```

RUN

LIMIT: 1 000

00:00:01.18

SAVE

COPY LINK

RESULTS QUERY HISTORY

CREATE CHART

DOWNLOAD TO CSV

COPY TO CLIPBOARD

Filter results

7 rows returned

_quarter	currency	avg
2023-1	USD	1.073006153846154
2023-4	USD	1.075466129032258
2024-2	USD	1.0767174603174603
2024-1	USD	1.0857873015873016

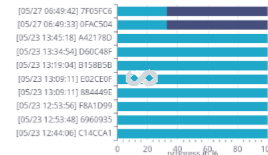
Leaderboard

current_ranking	name	winner	num_of_rows	dagrun_token
1	dazzling_roentgen	WINNER	181159	0A07EFA
2	tender_pike	WINNER	177829	F846493
3	dreamy_shockley	WINNER	176793	E78612D
4	fervent_turing	WINNER	173442	F2DB75A
5	epic_mcinty	WINNER	172051	914F9BD
6	optimistic_borg	WINNER	159020	A493963
7	blissful_bartik	WINNER	155840	A9A55F9
8	mystifying_jennings	WINNER	153215	7F05FC6
9	clever_melmer	WINNER	153058	6960935
10	profiant_raritan	WINNER	141376	818014E

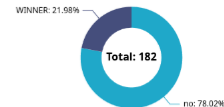
Latest Participants

start_time	name	dagrun_token	winner	current_ranking	num_of_rows
2024-05-27 06:49:41	mystifying_jennings	7F05FC6	WINNER	8	153215
2024-05-27 06:49:32	festive_golick	0FAC504	N/A	51	114708
2024-05-23 13:45:17	dreamy_swanson	A4217BD	N/A	135	83730
2024-05-23 13:34:54	gracious_payne	D60C48F	N/A	125	87453
2024-05-23 13:19:03	vibrant_hugle	B15885B	WINNER	28	127575
2024-05-23 13:09:11	trusting_kilby	884449E	N/A	173	45901
2024-05-23 13:09:10	trusting_bohr	E02CE0F	N/A	172	45901
2024-05-23 12:53:55	vigorous_neumann	F8A1D99	N/A	155	66584
2024-05-23 12:53:48	clever_melmer	6960935	WINNER	9	153058
2024-05-23 12:44:06	heroic_harlowell	C1ACCA1	WINNER	11	162666

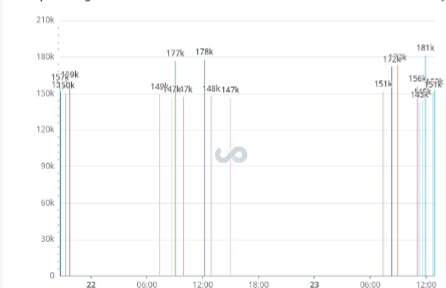
Progress



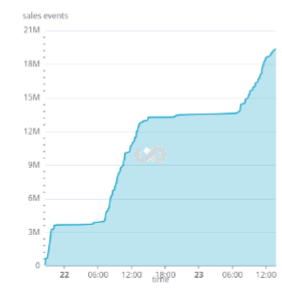
win rate



Data points ingested



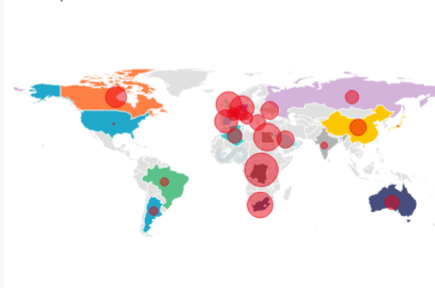
Total rows in database



Ingestion speed over time



Sales map

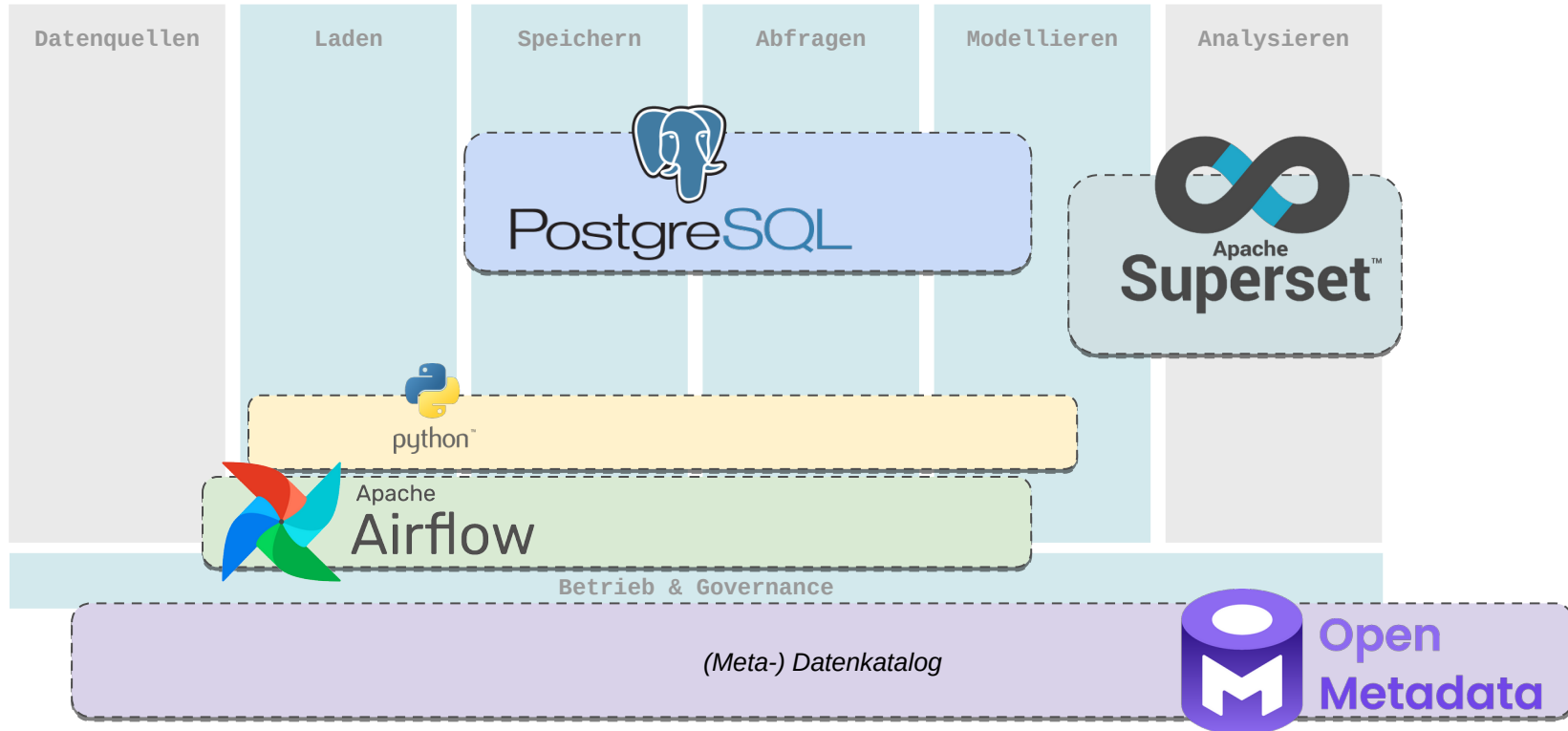


Top selling products

product_id	units sold	Revenue
7383	356419	148M
8615	348177	147M
3175	346782	147M
4796	350129	146M
999	354599	146M
11897	330098	146M
1969	356006	146M
9564	352339	146M
5078	348808	145M
11082	343049	145M
8720	353234	145M
2997	341725	144M
8581	346376	144M
9513	344757	144M



Klassisches Open Source Data Warehouse



Airflow DAGs Cluster Activity Datasets Security Browse Admin Docs 14:17 UTC AU

DAGs

All 53 Active 0 Paused 44

Running 7 Failed 1

Filter DAGs by tag Search DAGs Auto-refresh

DAG	Owner	Runs
dataset_consumes_1 consumes dataset-scheduled	airflow	0
dataset_consumes_1_and_2 consumes dataset-scheduled	airflow	0
dataset_consumes_1_never_scheduled consumes dataset-scheduled	airflow	0
dataset_consumes_unknown_never_scheduled dataset-scheduled	airflow	0
dataset_produces_1 dataset-scheduled produces	airflow	0
dataset_produces_2 dataset-scheduled produces	airflow	0
example_branch_operator example example2	airflow	1
example_branch_datetime_operator example	airflow	1
example_branch_datetime_operator_2 example	airflow	1
example_branch_datetime_operator_3 example	airflow	1
example_branch_dop_operator_v3 example	airflow	3
example_branch_labels	airflow	1

Airflow DAGs Cluster Activity Datasets Security Browse Admin Docs 09:00 UTC AU

Datasets

Filter datasets with updates in the past: All Time 30 days 7 days 24 hours 1 hour

Search by URI...

URI * LAST UPDATE *

- s3://consuming_1_task/dataset_other.txt Total Updates: 0
- s3://consuming_2_task/dataset_other_unknown.txt Total Updates: 0
- s3://dag1/output_1.txt Total Updates: 0
- s3://dag2/output_1.txt Total Updates: 0
- s3://this-dataset-doesnt-get-triggerred Total Updates: 0
- s3://unrelated/dataset3.txt Total Updates: 0
- s3://unrelated/dataset_other_unknown.txt Total Updates: 0
- s3://unrelated_task/dataset_other_unknown.txt Total Updates: 0

React Flow



The screenshot displays the Open Metadata interface with several overlapping panels:

- Data Assets Panel (Left):** Lists various data categories with counts: Tables (130,921), Stored Procedures (910), Databases (132), Database Schemas (728), Dashboards (810), Dashboard Data Mode (676), Pipelines (312), Topics (1612), ML Models (52), and Containers (572).
- Customer Table Overview (Top Center):** Shows a list of tables for the 'customer' domain, including 'warehouse.sales.customers' and 'warehouse.sales.raw_customers'.
- Table Description (Middle Left):** Provides details for the 'customers' table, stating it contains one row per customer and includes metrics like spend and forward-looking metrics.
- Table Description (Middle Right):** Provides details for the 'stg_orders' table, stating it contains information about orders for each channel or Facebook and Online Store.
- Table Description (Bottom Left):** Provides details for the 'orders' table, stating it contains information about orders used for analyzing sales trends.
- Table Lineage (Center):** A diagram showing the flow of data from source tables ('stg_customers', 'stg_orders') to a target table ('customers').
- Table Schema (Bottom Center):** Lists columns for the 'customers' table: customer_id, first_order, name, status, and number_of_orders.
- Table Schema (Bottom Left):** Lists columns for the 'stg_orders' table: customer_id, order_id, payment_id, order_date, and status.
- Table Schema (Bottom Right):** Lists columns for the 'stg_customers' table: customer_id, first_order, name, status, and number_of_orders.
- SQL Query (Right):** Shows a query to calculate order counts and amounts per customer.
- Edge Information (Far Right):** A pop-up window showing the relationship between 'stg_customers' and 'customers'.

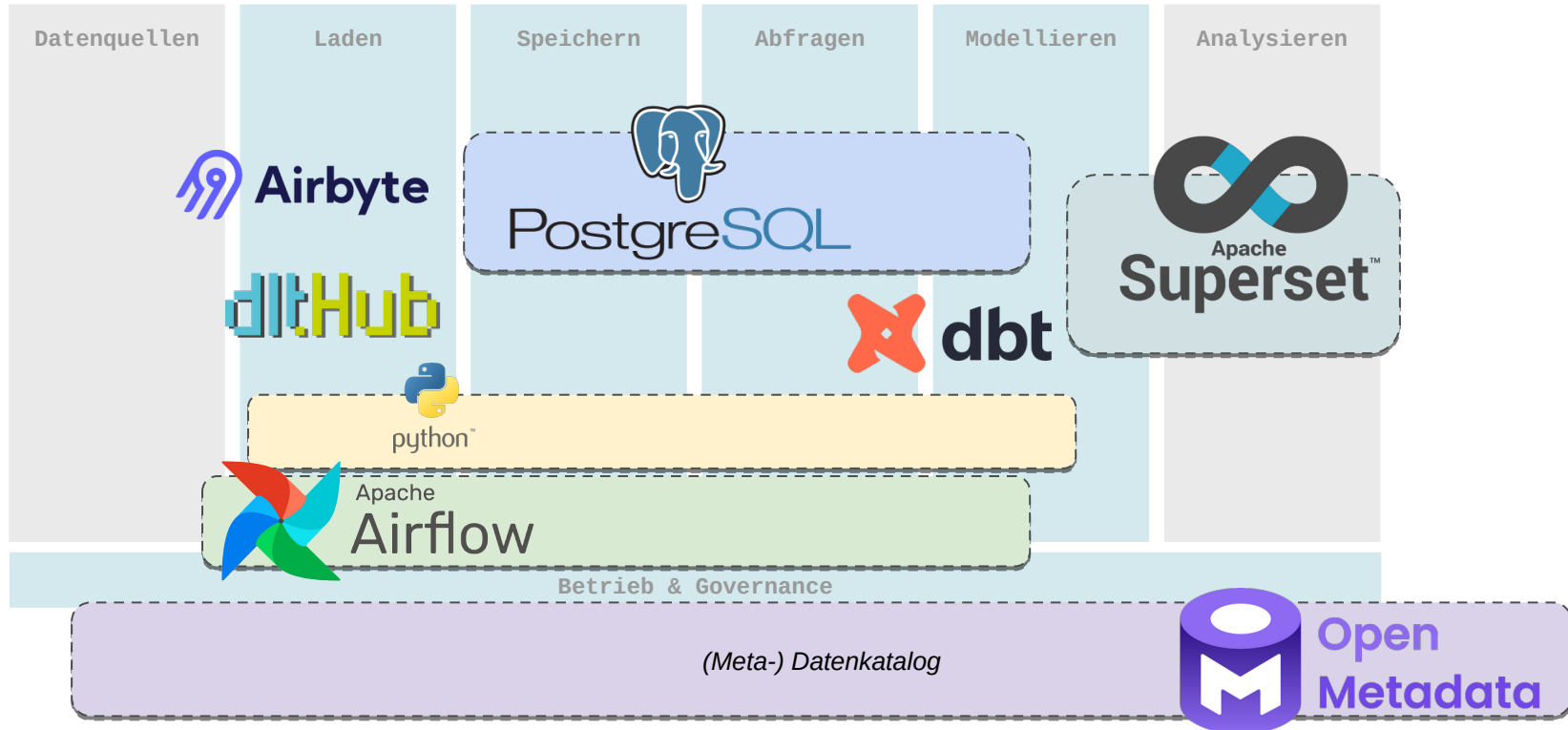


Ende-zu-Ende Betrieb mit Open Source Tools



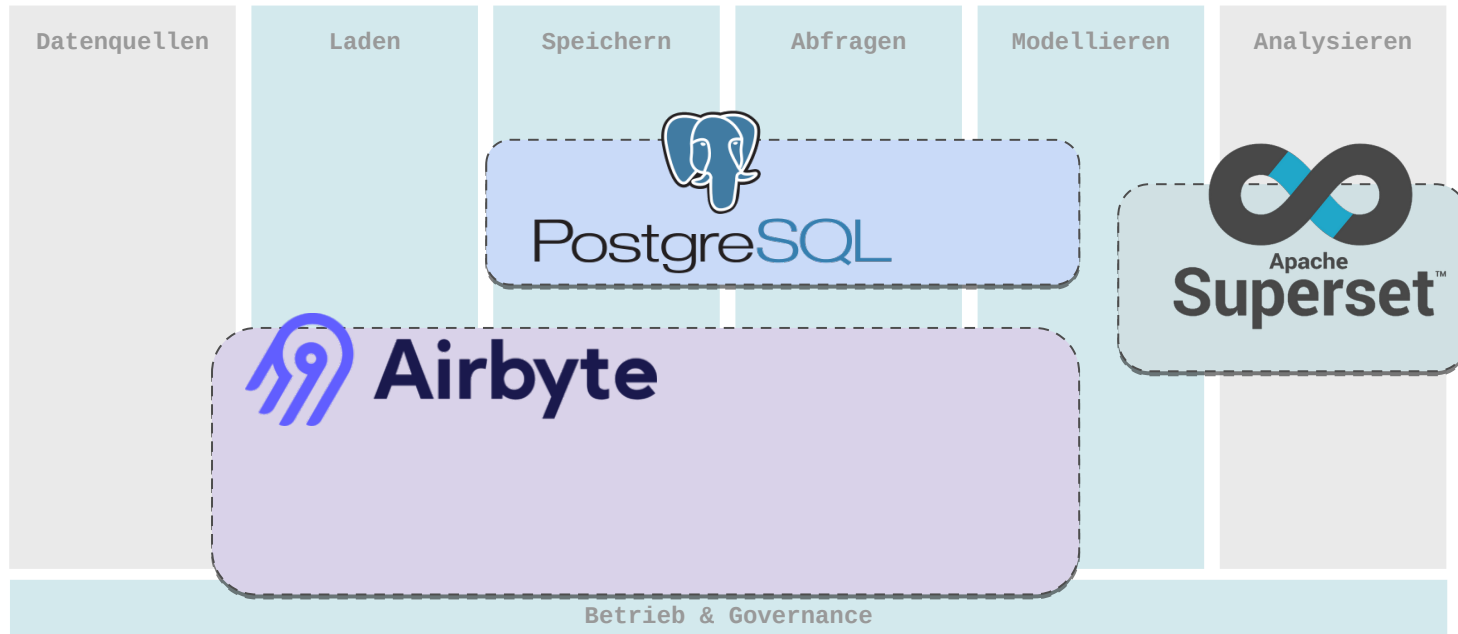


Effizienz auch in großem Maßstab





Einsteiger-Architektur (weniger Code-lastig)



You are using a trial of Airbyte. Your trial ends in 2 days. [Purchase now](#)

Select the type of source you want to connect

Search

Generally Available Beta Alpha 74 connectors

- Airtable
- Amplitude
- Chargebee
- Confluence
- Facebook Pages
- Freshsales
- Google Ads
- Google Search Console

[Test](#)
[Connections](#)
[Sources](#)
[Destinations](#)
[Builder](#)
[Billing](#)
[Resources](#)
[Support](#)
[Settings](#)

You are using a trial of Airbyte. Your trial ends in 1 day. [Purchase now](#)

Connections / New connection

Define source > Define destination > **Configure connection**

Data residency

Data residency

Configuration

Replication frequency

Destination Namespace

Destination Stream Prefix

Detect and propagate schema changes

Activate the streams you want to sync

Search stream name

Hide disabled streams

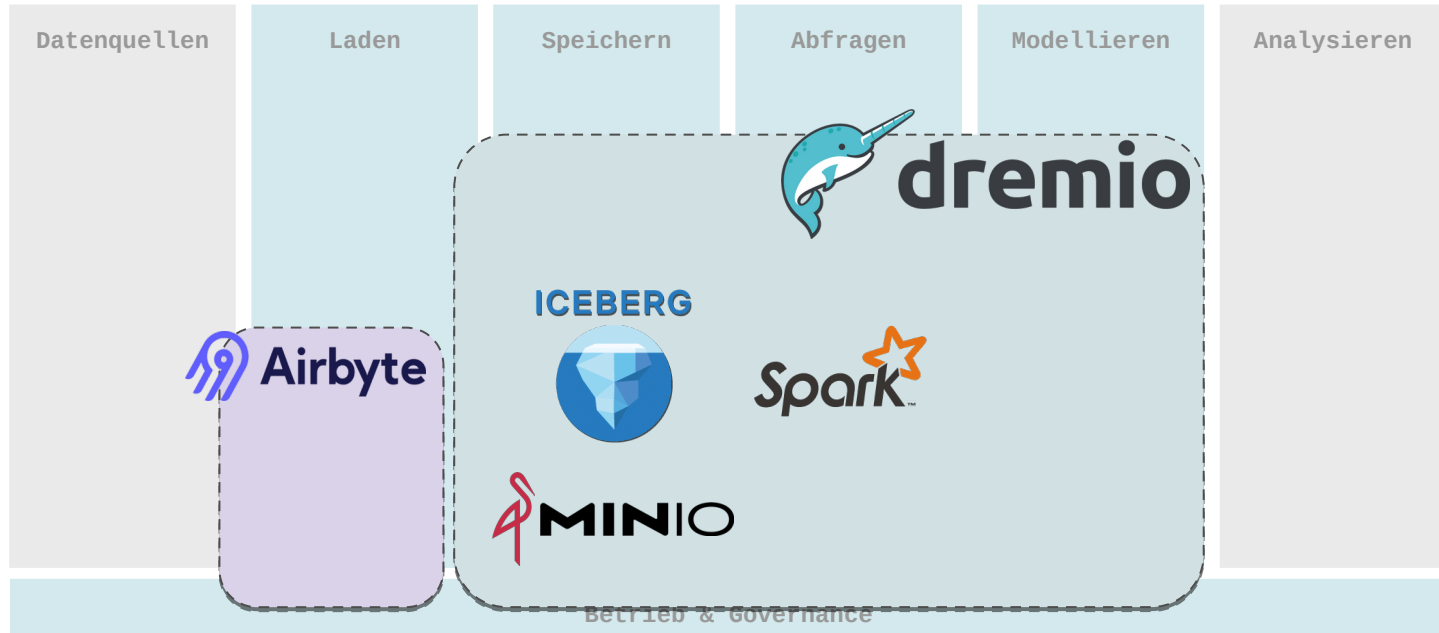
<input type="checkbox"/> Sync	Data destination	Stream	Sync mode		Fields
<input type="checkbox"/>	<destination schema>	custom_fields	Full refresh	Override	All
<input type="checkbox"/>	<destination schema>	projects	Full refresh	Override	All
<input type="checkbox"/>	<destination schema>	sections	Full refresh	Override	All

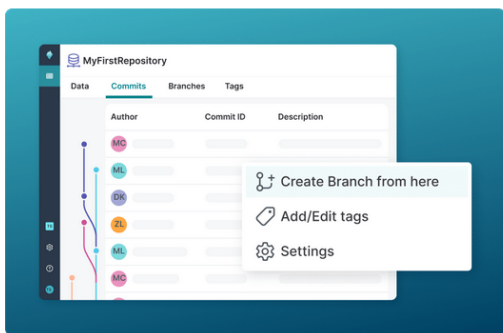
[Test](#)
[Connections](#)
[Sources](#)
[Destinations](#)
[Builder](#)
[Billing](#)
[Resources](#)
[Support](#)
[Settings](#)





Einsteiger- Data Lakehouse mit Dremio



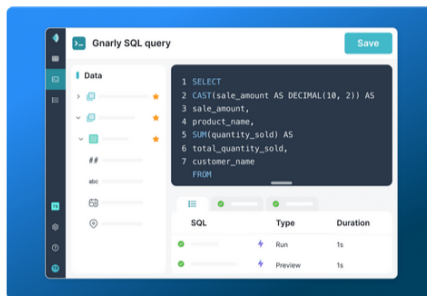


Flexible version control with data history and time-travel

Reproduce models and dashboards with catalog-level time-travel, and use tags to identify milestones in the history of your data. Instantly recover from mistakes by rolling back your lakehouse to a prior state.

[Learn more about time-travel](#) →

Zero copy, zero movement data



Federated querying for all your data, everywhere

Designed for interactive analytics and DML on the data lake, the Dremio SQL Query Engine makes it easy to analyze all of your data - whether on the data lake or in other data sources. Our connector ecosystem features dozens of integrations with an array of sources, including object storage, metastores, and databases in the cloud and on premises. Because Dremio queries your data at the source, there is no data movement, no data copies, and no complex ETL.

[See our connector list](#) →

Flexible, fast, lightweight data transformation

Reduce reliance on costly ETL tools and brittle, complex data pipelines. Dremio makes it easy to apply last mile data transformations, including filtering, sorting, aggregating, joining, casting. These transformations can be quickly built as Dremio Views - governed virtual data sets with layered transformations - that can be flexibly shared and modified for downstream data projects.

[Learn more about virtual data transformation with Views](#) →

		ROW PRIVILEGES			
		TABLE PRIVILEGES			
		Select	Insert	Delete	Truncate
ML	ML	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
KC	MC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
ML	DK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
MC	IS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
IS	MC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>





Fahrplan



Vorstellung

Einstieg und Motivation

Vorstellung Architekturen und Open Source Tools

Fragen und Diskussion



Fazit in einem Satz!?

Die **Kombinationen** von
spezifischen Schnittstellen, Anforderungen und Einschränkungen
sowie **verfügbaren Open Source Tools**
für automatisierte, professionelle Datenverarbeitung und -analyse
sind praktisch unendlich!

(es werden ständig mehr)



Fazit ~~in einem Satz!?~~

Open Source Software ist ein absoluter **Innovationstreiber**
und ermöglicht einen schnellen **Einstieg** in die Welt **professioneller**
Datenanalyse

- auch privat oder fürs Hobby 🐧

...einfach mal ausprobieren



docker run und Schluss mit Excel



docker



ubuntu



Apache
Airflow



GitLab
CI/CD



Open
Metadata



python™

pandas



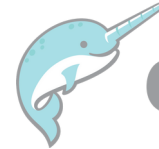
jupyter

Spark™



DELTA LAKE

ICEBERG



dremio

MariaDB



DuckDB



PostgreSQL

Airbyte

dltHub



Apache
Superset™

dbt



Fragen, Diskussion,
Ideen, Feedback

Professionelle **Datenanalyse** mit **Open Source** Software

Markus Suhr, kielux@msuhr.net

22. Kieler Open Source und Linux Tage

Freitag 20.9.2024, 13h

