

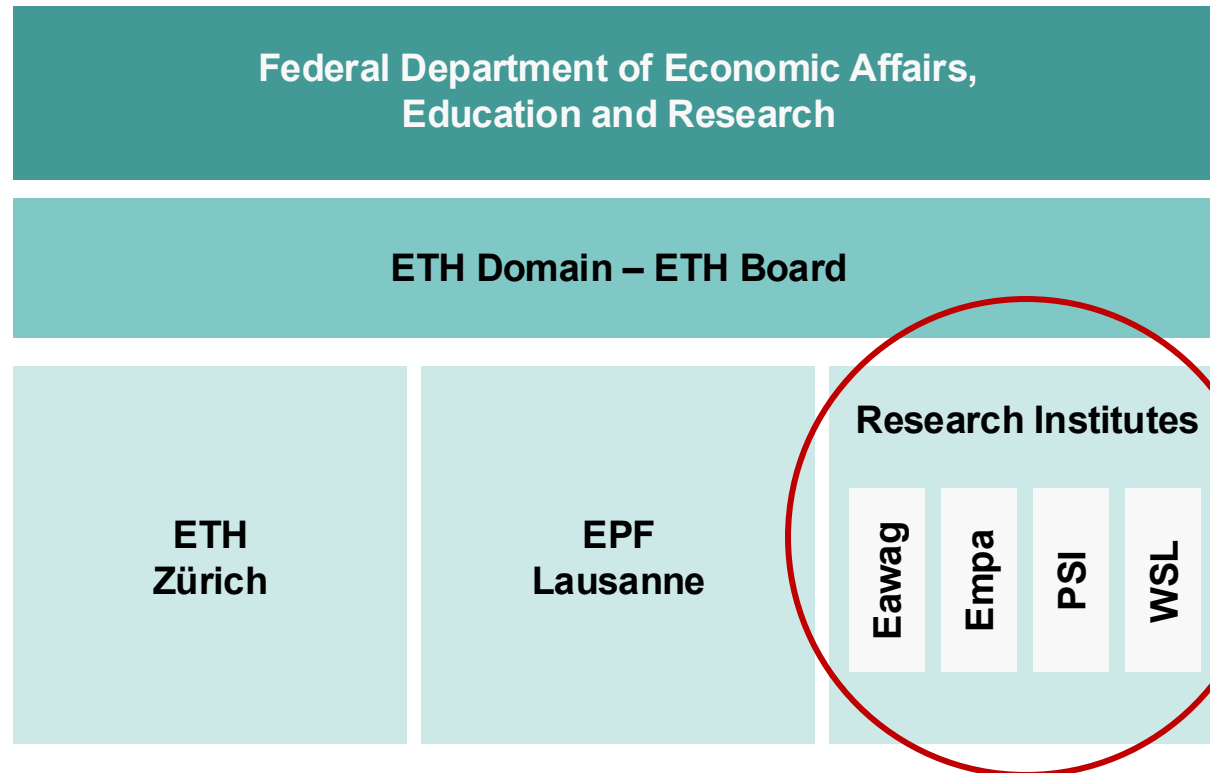
# Beyond Standard Reports: Building a Sovereign, AI-assisted Dashboard for Data-driven Decisions

Dimitrios Antonakis

Lib4RI – Library for the Research Institutes within the ETH Domain:  
Eawag, Empa, PSI & WSL

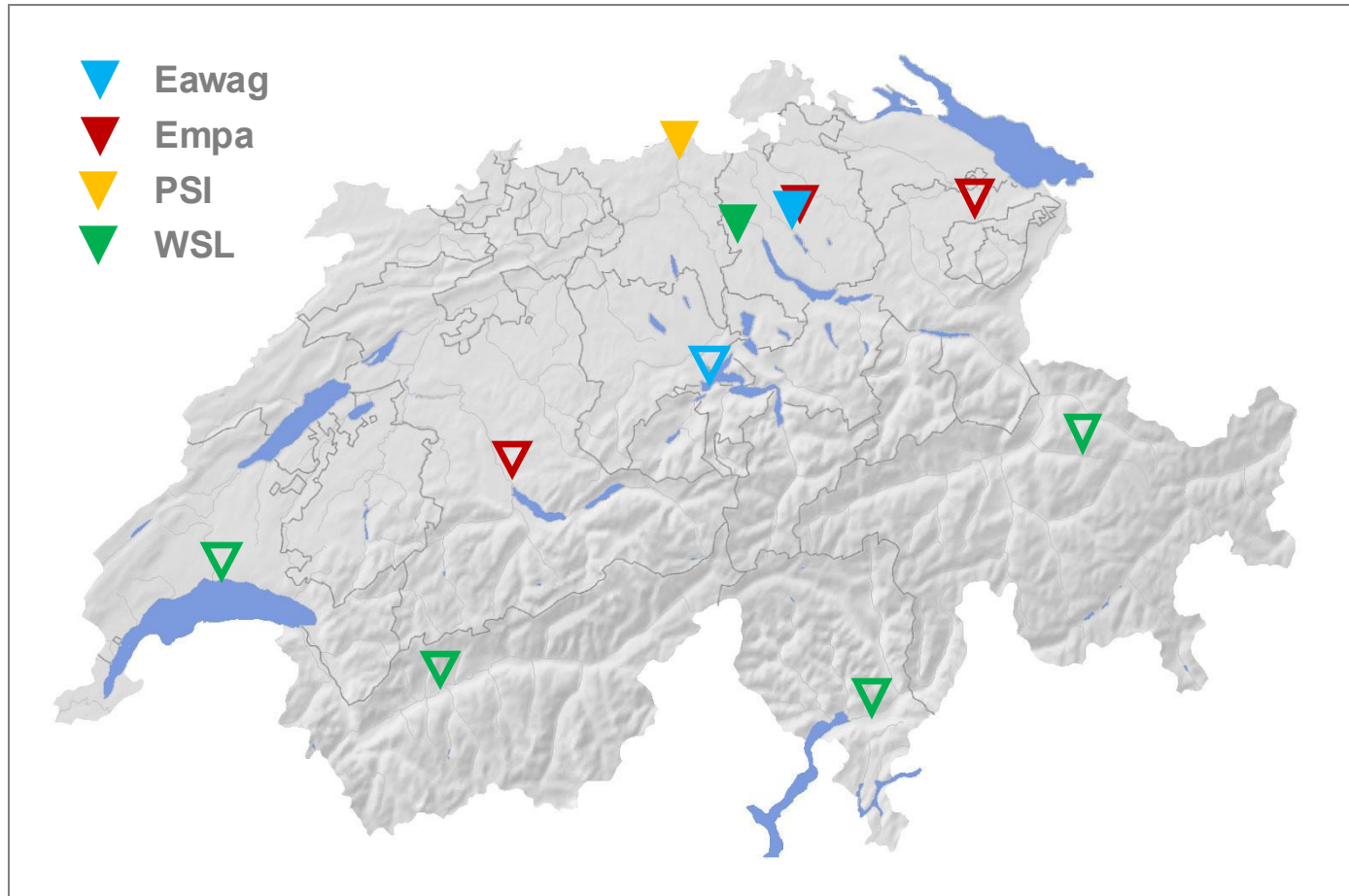


# Lib4RI - Library for the Research Institutes within the ETH Domain



- Eawag – Swiss Federal Institute of Aquatic Science and Technology
- Empa – Swiss Federal Laboratories for Materials Science and Technology
- PSI - Paul Scherrer Institute (natural and engineering sciences)
- WSL – Swiss Federal Institute for Forest, Snow and Landscape Research

# The four Research Institutes within the ETH Domain



**4'308 FTE staff**  
**1'474 FTE researchers**  
**658 FTE PhD candidates**

**4'438 publications per year**

Data as of 31.12.25



Search articles, books, journals ☆ including Open Access information ☆ & more

Library for the Research Institutes within the ETH Domain: Eawag, Empa, PSI & WSL

Lib4RI is the joint «Library for the Research Institutes within the ETH Domain: [Eawag](#), [Empa](#), [PSI](#) & [WSL](#)». As a scientific library, we provide all affiliates of the four institutes at their 11 research sites with extensive access to literature and technical information for research, teaching, and consulting. Furthermore, we offer a broad range of services surrounding the publication process.

## Lib4RI News

27.04.2026

### Research Data Conference (RDC) 2026

Lib4RI is proud to be part of the organisation committee of the Research Data Conference (RDC) 2026. It will take

30.03.2026

### New Tools page

Whether you're just starting a research project or putting the finishing touches on a publication, finding the right tool at the right time can make all the

16.03.2026

### Lib4RI training series 2026: Essential skills for today's researchers

Spring is at our doorsteps – and with it the start of Lib4RI's training series 2026:

All News



## Extensive e-resources offering

48'218 e-journal holdings  
 917'427 e-book holdings

## Open Access

20+ Read & Publish agreements  
 78-93 % OA in recent years

## Comprehensive institutional repository

111'332 publications  
 1'189'633 full-text downloads per year

## Small library

CHF 5.89 MM in expenditures  
 16.5 FTE staff



Data as of 31.12.25

## The Problem



## The Problem

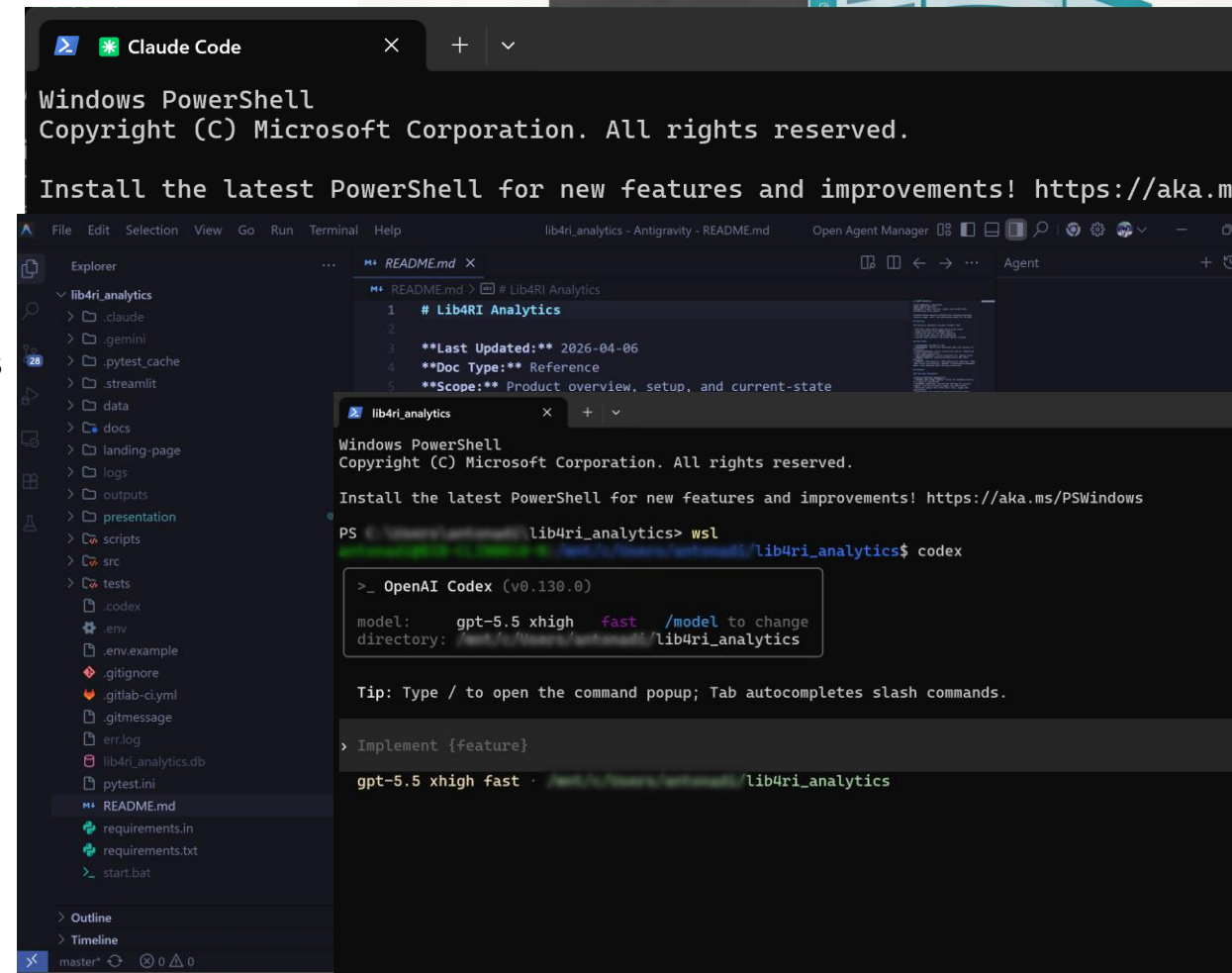
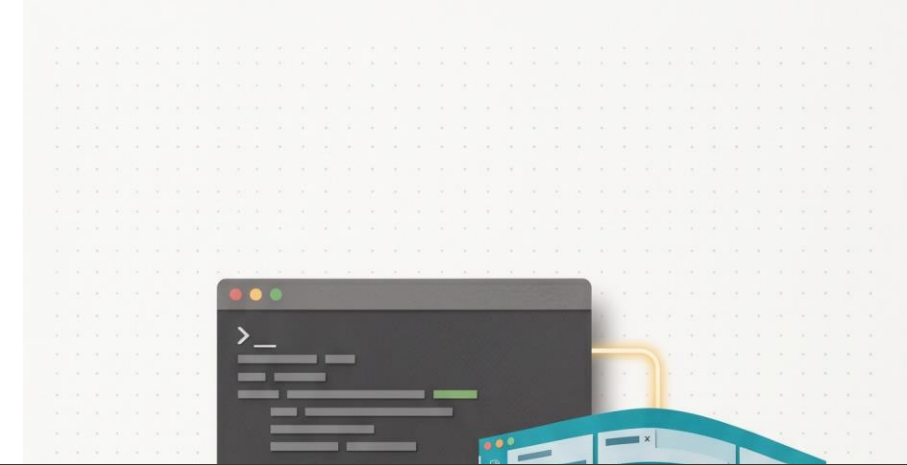
- Usage, costs, and publications did not talk to each other.
- Every renewal meant rebuilding the evidence.
- The real question: are we paying for value?





# AI Coding Assistance

- Terminal-based agents, not just chatbots
- Claude Code, Codex, and Antigravity
- They worked inside the real project
- Read code, edited files, ran tests, debugged errors



# The Solution



# From Manual to Automated

- **Before:** rebuild the evidence for every renewal
- **After:** one pipeline keeps it ready
  
- Usage, costs, publications, OA data, and currency data connected
  
- Dashboards update from reusable data flows
  
- Negotiation preparation becomes continuous, not seasonal

- Home
- Publisher Dashboards
  - Journals
  - Books
  - Databases
- Publisher Comparison
  - Journals
  - Books
  - Databases
- Analytics
  - Usage Explorer
  - Publication Explorer
  - Usage vs. Publications
  - Book Analytics
  - Resource Search
  - CRJ Explorer
- Print-friendly Report
- Tools
- COUNTER Version Coverage
- OpenAPC TA Detail
- Experimental
- Help & Reference
- View Logs

Dashboard Settings

## Publisher Dashboard

Cost, usage, and publication analysis for individual publishers

Select Publisher: Demo Publisher Refresh Data

**⚠ Presentation Mode active** - dashboard shows a synthetic publisher with fabricated figures. Toggle off in the sidebar to restore real data.

Usage data through April 2026 | DORA synchro May 17, 2026

Filter data by year range: 2020 - 2026

### Executive Summary

Cost (2026) <b>80,600 CHF</b> +3.0%	Usage (2026) <b>~37,050 (est.)</b> +3.8%	Cost Per Usage (2026) <b>~2.18 CHF (est.)</b> +6.0%	Cost: Author Pubs (2026) <b>31</b> +3.1%
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### Subscription Cost & Price Increase

Year	Cost (CHF)	Price Increase (%)
2020	50,000	2.8%
2021	55,000	3.0%
2022	75,000	2.5%
2023	76,700	2.4%
2024	72,400	2.2%
2025	76,000	2.3%
2026	80,600	2.0%

### Usage by Access Type

Year	File to Read	Open Access	Controlled
2020	17%	87%	0%
2021	15%	86%	0%
2022	12%	80%	0%
2023	10%	80%	0%
2024	9%	78%	0%
2025	8%	79%	0%
2026	8%	79%	0%

### DORA Publications

By Author Role | By Journal | Usage vs Pubs

Year	Corresponding Author	Not Specified	Other Authors	TA
2020	25	38	0	0
2021	27	38	0	0
2022	29	42	0	0
2023	31	45	0	0
2024	33	48	0	0
2025	32	50	0	0
2026	31	51	0	0

### Top 10 Journals by Usage

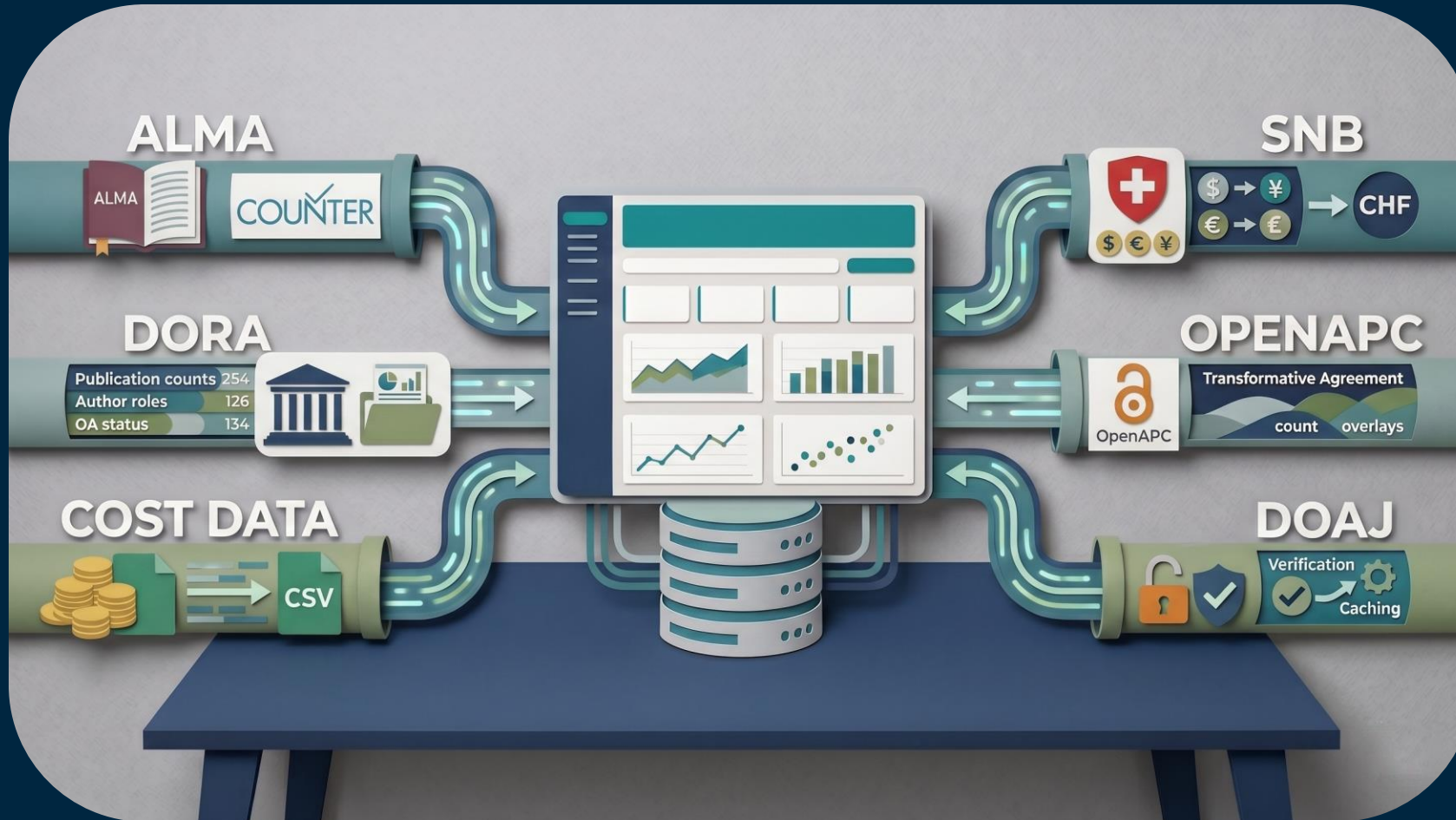
Trends | Share

### Cost Per Usage

Year	Cost Per Usage (CHF)
2020	2.00
2021	2.00
2022	2.08
2023	1.89
2024	1.94
2025	2.05
2026	2.18

### Cost Per Usage Comparison

# Connecting the Dots via APIs



# Data Sources - What Each API Contributes

## Alma Analytics API

### WHAT IT OFFERS

**COUNTER reports: usage and denials for journals, books and databases**

Harvested periods

### DASHBOARD VALUE

Shows what researchers actually use and whether data is complete

## DORA Solr endpoint

### WHAT IT OFFERS

**Institutional publication counts by publisher and year**

Corresponding vs other author role, OA counts, journal-level data

### DASHBOARD VALUE

Connects subscriptions to Lib4RI research output and supports PAR fee analysis

## DOAJ API

### WHAT IT OFFERS

**Open Access journal status and APC metadata**

### DASHBOARD VALUE

Separates paid subscription value from OA availability

## OpenAPC OLAP API

### WHAT IT OFFERS

**Transformative Agreement article counts**

### DASHBOARD VALUE

Shows how Read & Publish agreements translate into covered publishing

## Swiss National Bank data API

### WHAT IT OFFERS

**Historical and current exchange rates for CHF conversion**

### DASHBOARD VALUE

Makes costs comparable across EUR, USD, GBP, and CHF invoices

## Local cost CSV files

### WHAT IT OFFERS

**Subscription costs and currencies**

Publisher mappings

### DASHBOARD VALUE

Financial anchor for CPU, PAR fee, and renewal comparison

## SCHEDULER

APScheduler  
Daily / Weekly / Monthly

## API CLIENTS

Alma · DORA · DOAJ  
OpenAPC · SNB

## PROCESSING

Pandas & NumPy  
Clean & deduplicate

## STORAGE

SQLAlchemy + SQLite  
DB & in-memory cache

## DASHBOARD

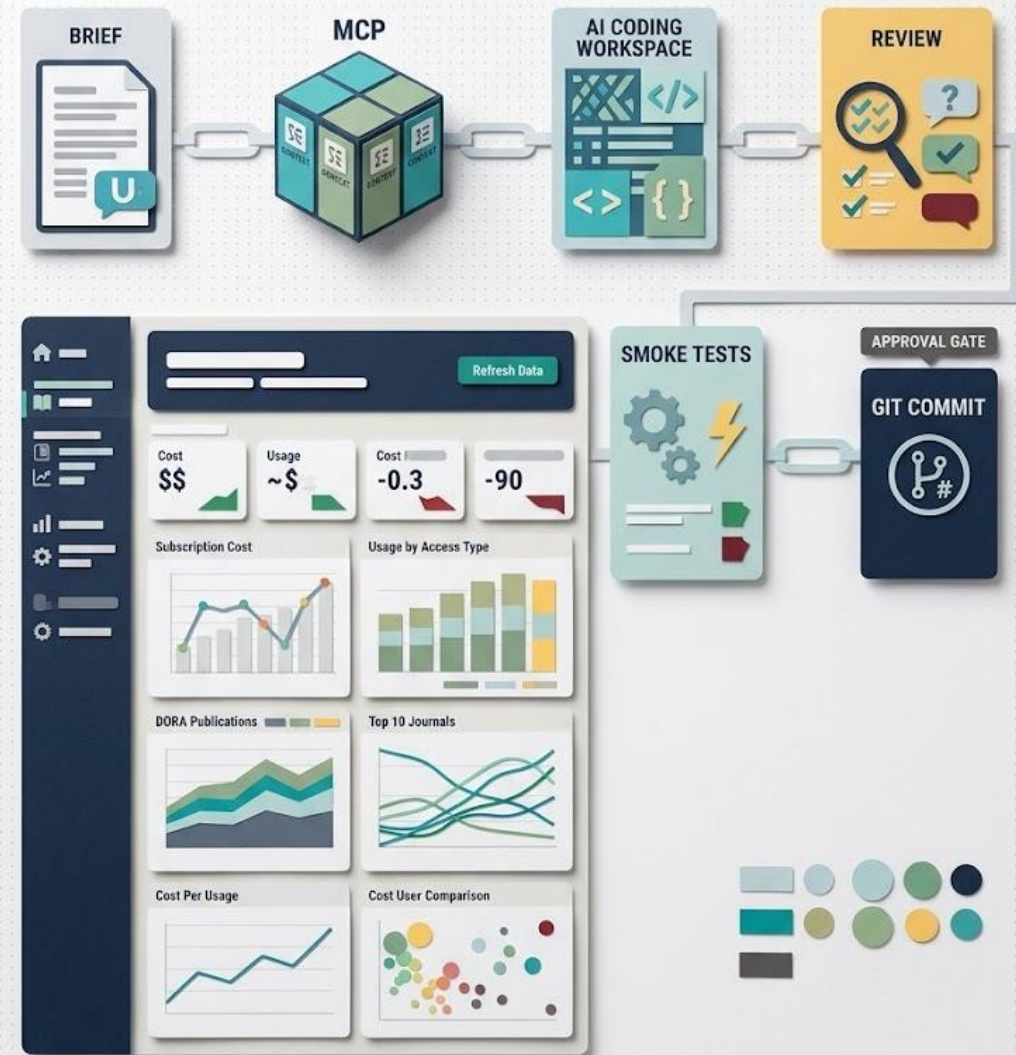
Streamlit + Plotly  
Interactive & exports





# AI Coding workflow

- You do not need to start with a big software team
- You do need clear requirements
- You do need review and tests
- You do need reusable building blocks
- **AI accelerates the work, but the domain expert steers it**



# AI Assisted Development

**33,000+**

Lines of Production Python

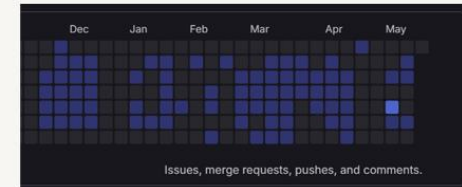
**57**

Modules across 6 integrated data sources

**161**

Automated Tests (Pytest)

**~6 months**



# The Dependency Map

Each Page Composes Shared Modules

	Charts 42 fn	Data Queries 23 fn	Currency 8 fn	Cost-per-Use 9 fn	Publisher Names 4 fn
Journals Dashboard	✓	✓	✓	✓	✓
Books Dashboard	✓	✓	✓	✓	✓
Databases Dashboard	✓	✓	✓	✓	
Journal Analytics	✓	✓		✓	
Book Analytics	✓	✓		✓	
Journals Comparison		✓	✓		✓
Books Comparison		✓	✓		
Databases Comparison		✓	✓		
Resource Analytics		✓			

## Questions? Suggestions?

What's possible for you

We can share the reusable parts.

The rest, you build yourself.

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+41 58 765 53 30

- Home - Institution-wide year-over-year usage trends for journals, books, and databases
- Publisher Dashboards
  - Journals - Per-publisher journal view: KPIs, cost, access-type split, top 10, CPU bubble, PAR fee, denials, COUNTER coverage
  - Books - Per-publisher book view: KPIs, cost, usage, CPU, denials, year-of-publication heatmap
  - Databases - Per-publisher database view: cost, searches vs investigations, top databases, cost-per-search, CPU, COUNTER timeline
- Publisher Comparison
  - Journals - Side-by-side journal metrics: cost, usage, CPU, PAR, radar, heatmap
  - Books - Side-by-side book metrics: cost, usage, CPU
  - Databases - Side-by-side database metrics: cost, searches, cost-per-search
- Analytics
  - Usage Explorer - Cross-publisher usage trends, treemaps, hybrid/OA/denied journals spotlight, CPU ranking
  - Publication Explorer - DORA output by publisher and journal, top-15 summary with trend arrows and TA overlay
  - Usage vs. Publications - Correlation lens: scatter, rank slopes, journal scatter, Bradford concentration
  - Book Analytics - Cross-publisher book usage trends, share treemaps, CPU ranking
  - Resource Search - Find resources by title, ISSN, or ISBN and compare their usage histories
  - CPU Explorer - Animated cross-publisher CPU view with efficiency zones
- Tools & Reports
  - Print-Friendly Report - Static publisher dashboard image for printed handouts
  - Tools - Admin launcher: operations, scheduled jobs, console
  - COUNTER Version Coverage - Fleet view of R5 vs R5.1 overlap and data freshness
  - OpenAPC TA Detail - Pivot of TA articles by institution, publisher, contract, year
  - Experimental - Prototype charts not yet promoted to production
  - Help & Reference - In-app page guide and glossary (APC, CPU, DORA, PAR)