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Analytics SaaS takeover & revamp

COMPLEX ANALYTICS. ENGINEERED TO PERFORM.

430+ active subscribers.



Emilian Manolache
Senior Full-Stack Engineer & SaaS Architect

Full-stack SaaS revamp / Code restructuring / Data architecture / Performance optimizations / API & billing security

2023-2024

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SAAS TAKEOVER & REVAMP

I TOOK OVER AND REVAMPED A LIVE ANALYTICS SAAS

A specialist charting brief grew into full-stack ownership and a comprehensive data system overhaul.

INITIAL BRIEF

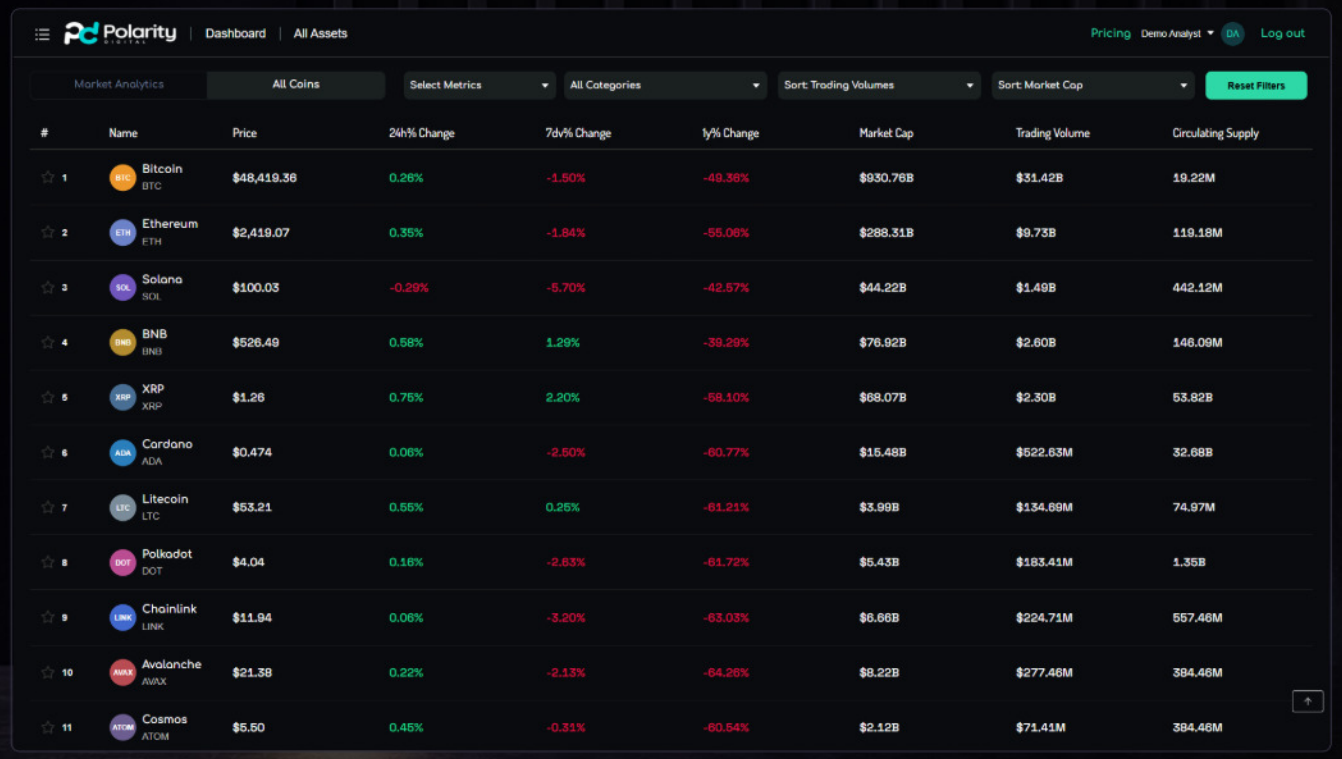
Custom formulas and Highcharts expertise

I diagnosed problems beneath the interface and took on the wider product.

EXPANDED RESPONSIBILITY

Frontend and backend revamp

I rewrote and reorganized application code, secured the API offering, built administration tools and improved Stripe operations.



Engineering ownership across the product and its production workflows.

Frontend & backend

Data & administration

API access & billing

Production support

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FRONTEND REWRITE & ARCHITECTURE

I REBUILT THE FRONTEND AROUND FOCUSED MODULES

A substantial React rewrite made the workbench easier to extend and maintain.



CENTRAL CHART COMPONENT

3,928 → 802

Lines after extracting responsibilities into focused modules.

Chart rendering
Configuration, series updates and axes

Formula engine
Parsing, evaluation and input state

Application structure
Metric services, dashboard and account views

91 paths reorganized across the frontend, spanning the dashboard, account and analytics views.

I separated chart rendering, formula processing and data retrieval instead of keeping them intertwined in one central component.

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REACT & HIGHCHARTS PERFORMANCE

I MADE COMPLEX CHARTS FEEL RESPONSIVE

I reworked React state and Highcharts update paths across the analysis experience.

≈5×

faster chart loading

Client-reported estimate
Jerry Eckman · 17 January 2024

≈50%

better page switching

Client-reported estimate
Jerry Eckman · 26 March 2024

I separated typing from chart work

Formula input stays in local React state. Evaluation updates the chart when the user is ready.

I reduced unnecessary updates

Checks on relevant properties target data refresh. Series and axes update when their parameters change.

I coordinated the rendering lifecycle

Metric loading, formula inputs and redraws work together. Stable IDs and cleanup of inactive tabs keep interactions manageable.

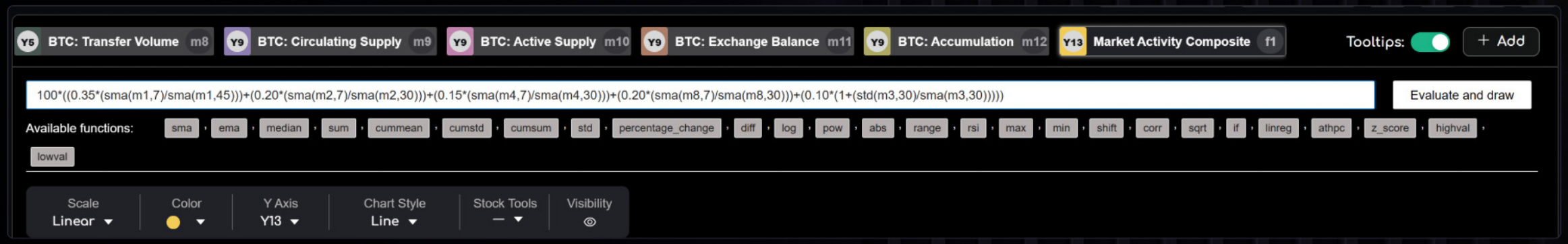
Client estimates reflect separate milestones. I continued refining state, loading and rendering throughout the engagement.

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CUSTOM PARSER & CALCULATION ENGINE

I BUILT THE PARSER BEHIND ADVANCED ANALYSIS

Nested expressions, series references and calculation handling became a dedicated engine.



EXAMPLE PROCESSED BY THE PARSER

```
100*(
  (0.35*(sma(m1,7)/sma(m1,45)))+
  (0.20*(sma(m2,7)/sma(m2,30)))+
  (0.15*(sma(m4,7)/sma(m4,30)))+
  (0.20*(sma(m8,7)/sma(m8,30)))+
  (0.10*(1+(std(m3,30)/sma(m3,30))))
)
```

Five source metrics contribute to this weighted composite.

MY CONTRIBUTION

Parsing, evaluation and chart integration

I implemented and refined nested calculations, metric/formula references, timestamp alignment and error handling.

I worked through missing values, shifts and statistical edge cases behind the visual result.

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FORMULA CAPABILITIES

A BROAD FORMULA ENGINE FOR CUSTOM ANALYSIS

I implemented, integrated and refined the parser workflow behind these 26 workbench functions.

Moving calculations

sma Simple moving average
ema Exponential moving average
median Rolling median
sum Rolling sum

Cumulative values & indexing

cummean Cumulative mean
cumstd Cumulative standard deviation
cumsum Cumulative sum
range Sample index: 0, 1, 2...

Change & momentum

percentage_change Relative change
diff Change over a window
rsi Relative strength index
athpc % change from running high
shift Forward day shift

Transforms & conditional logic

log Natural logarithm
pow Power / series exponents
abs Absolute value
sqrt Square root
if Conditional values

Comparison & extremes

min / max Pointwise extrema
highval / lowval Overall or rolling extrema
corr Rolling correlation

Regression & dispersion

linreg Linear: full series / rolling
z_score Cumulative / rolling z-score
std Rolling standard deviation

ARITHMETIC `+ - * / ^`
Nested expressions, parentheses, implicit multiplication and mN / fN series references

CONDITIONAL COMPARISONS `= != > < >= <=`

Additional parser families: lt / logt (log10), expreg / ereg (exponential regression), treg (log-log regression) and exponent (scalar power).

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BACKEND REWRITE

I REWORKED THE BACKEND AND DATA MODEL

I rewrote substantial server logic and redesigned how metrics and historical series move through the product.

01

Server architecture

I reorganized API controllers, shared helpers and model responsibilities, replacing tightly coupled backend code with clearer modules.

02

New metric data system

I implemented a metadata-driven metric system around provider mappings, coin coverage and separate cryptocurrency and economic series.

03

Historical data and migrations

I improved historical retrieval and query performance, normalized chart data, and carried schema changes through Sequelize migrations.

Node.js backend and PostgreSQL data architecture

I gave ongoing product development and production fixes a clearer foundation.

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API SECURITY & ACCESS

I SECURED THE API OFFERING

I protected premium data and kept provider access under server-side control.

CUSTOMER APPLICATION

Browser requests

No exposed provider keys

→

BACKEND API

Identity and access controls

Pro entitlements and request limits

→

EXTERNAL DATA

Provider APIs

Keys remain on the backend

I protected commercial data

I enforced subscriber-aware access in the backend so changing the client's plan state could not unlock **PRO data**.

I controlled API consumption

I implemented **API-key and IP rate limits**, with configurable hourly allowances and visibility into total and recent usage.

API administration: I added key creation, editing, disable/revoke controls and request-usage visibility.

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ADMINISTRATION & DATA OPERATIONS

I BUILT THE TEAM'S DATA ADMINISTRATION APP

I delivered the Angular/Sails application and scheduled integrations behind the analytical product.

ANGULAR / SAILS / WATERLINE

I made the product configurable

Metric definitions

Provider fields and parameters, coin coverage, categories and free/Pro access.

Dashboard and workbench

Metric visibility and ordering, decimal precision, formatting, labels and color coding.

Operational management

Coins, economic series, managers, API keys and application settings.

SCHEDULED DATA INTEGRATIONS

I connected the provider feeds

CoinGecko

Market refreshes, coin selection and history-retention rules.

Santiment

Provider mapping, configurable parameters and missing-coverage tracking.

FRED

Scheduled economic-series updates and stored observations.

I replaced repeated frontend/backend edits with admin configuration. Provider changes can trigger metric resynchronization.

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BILLING & CALCULATION MODERNIZATION

I STRENGTHENED BILLING AND CALCULATION WORKFLOWS

I reworked customer billing, added durable webhook idempotency and consolidated scheduled calculations.

SUBSCRIPTION LIFECYCLE

Payments, recovery and Pro access

I improved renewals, cancellation and card updates, linking billing state to **Pro entitlements**.

I added overdue-invoice logic, a **15-day grace period** and status messaging, and configured Stripe retries and failed-payment notifications.

BILLING RELIABILITY

Durable Stripe webhook idempotency

I implemented durable idempotency so repeated Stripe events could be handled safely without duplicating billing-side effects.

Reliable event handling became part of the subscription workflow.

CALCULATION MIGRATION

Python to scheduled Node.js jobs

I migrated the separate Python calculation workflow into **Node.js jobs within the application codebase**.

I brought calculation scheduling and maintenance into the same application workflow.

My scope: the billing lifecycle, repeated-event handling and the calculations running behind the product.

I IMPROVED SAVED AND COMMUNITY CHARTS

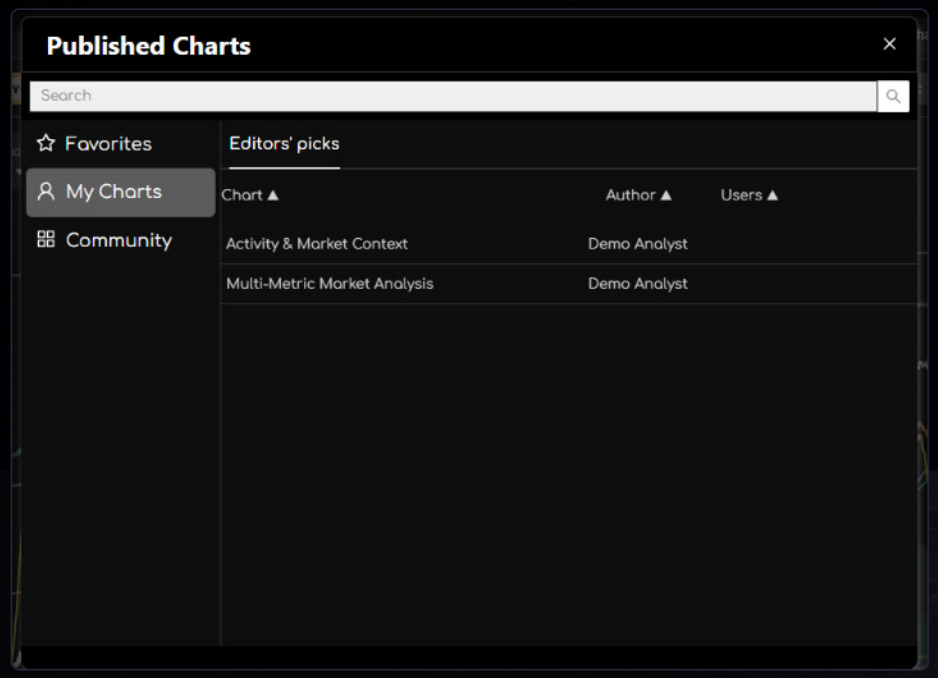
I refined the workflows for returning to analysis and exploring charts shared by other users.

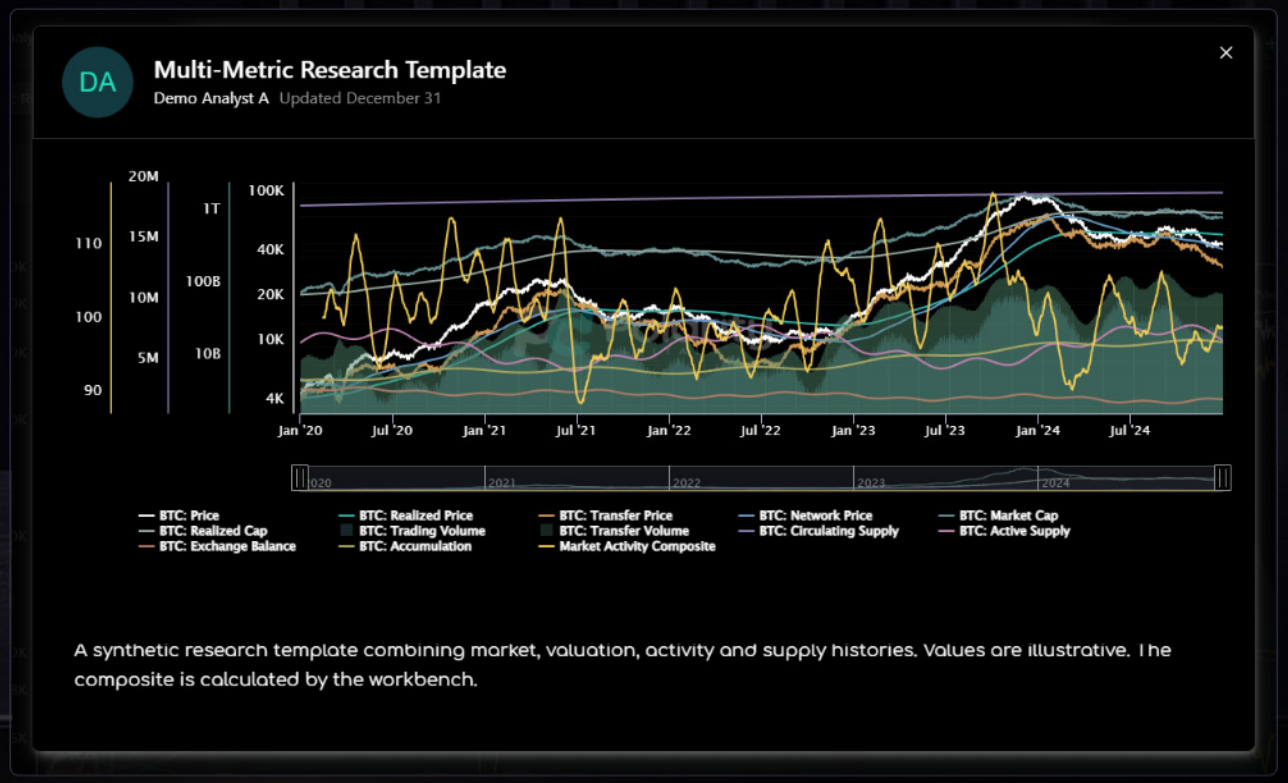
CHART PERSISTENCE AND COMPATIBILITY

I fixed save/load and rename flows, including compatibility with older charts.

COMMUNITY PREVIEWS AND INTERACTIONS

I refined chart previews and commenting to support browsing and sharing analysis.





A synthetic research template combining market, valuation, activity and supply histories. Values are illustrative. The composite is calculated by the workbench.

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PRODUCTION DELIVERY & CONTINUED RESPONSIBILITY

I CARRIED THE REVAMP THROUGH TO PRODUCTION.

Data migration, releases, troubleshooting and continued product support.

DATA & ADMINISTRATION · JAN 2024

Migrated the data model.

I completed the economic-data migration and connected the new administration app to the live database.

PRODUCTION RELEASE · APR 2024

Took the revamp live.

I handled deployment, staging and database troubleshooting, then continued resolving production issues.

CONTINUED PRODUCT SUPPORT

Kept improving the product.

I continued delivering formula updates, chart compatibility fixes, API/access support and subscription recovery.

THE LIVE PRODUCT I WORKED ON

431
active subscribers

$5,568
monthly recurring revenue

60,885
daily crypto data points

47 economic series · 123 crypto metrics across 495 coins

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THE CLIENT'S ACCOUNT OF THE TAKEOVER

WHY THE CLIENT TRUSTED ME WITH THE REBUILD.

The inherited problems, the underlying fixes and the application I delivered.

> "He took over a very complex project that had been left in a terrible state after a previous developer failed to build it correctly. He identified and fixed the underlying problems and ultimately rebuilt the application from the ground up."

Jerry Eckman · Polarity Digital

Excerpt from his Upwork client review

"I would 100% recommend Emilian and would absolutely hire him again."