Koios Evolution:

Enhancements, Infra Support & Maintenance

Project ID: 1000098

Executive Summary

The "Koios Evolution: Enhancements, Infra Support & Maintenance" proposal sought to considerably improve the capabilities of the Koios API, reinforce its infrastructure, and provide continuing maintenance and support. Over the last year, we have reached significant milestones, formed key partnerships, and regularly supplied robust decentralised services to our community. This paper summarises the Koios Evolution project's accomplishments, contributions, and future plans.

Introduction

The Koios API has been at the vanguard of decentralised innovation, serving as a critical component for blockchain developers, stakeholders, and communities alike. The primary goals of this proposal were to:

- Expand the functionality and reach of Koios API.
- Integrate new tools and services.
- Ensure the stability and performance of the infrastructure.
- Provide continuous support and updates to the community.

This report details the milestones reached, collaborations developed, and the proposal's influence on the Koios ecosystem.
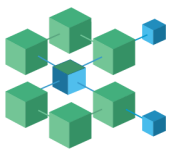
Milestones Achieved

Milestone 1: Koios Lite Architecture and Integration

Objective: Design and build the Koios Lite architecture, integrate it with gRest for chain history access, thoroughly test and debug the system, and onboard additional instance providers.

Achievements:
- Architected and implemented Koios Lite, a streamlined version of the Koios API.
- Successfully integrated Koios Lite with gRest, enabling comprehensive access to blockchain history.
- Conducted rigorous testing and debugging to ensure system stability.
- Onboarded multiple new instance providers to enhance decentralisation and availability.

Milestone 2: AI Platform Integration and Plugin Development

Objective: Identify key AI platforms, develop and maintain plugins, and ensure thorough testing and debugging of these plugins.

Achievements:
- Identified and prioritised AI platforms that would benefit from Koios API integration.
- Developed and maintained robust plugins, facilitating seamless interaction between Koios and these platforms.
- Conducted extensive testing and debugging to ensure compatibility and functionality.

Reference: https://www.koios.rest/guide/AI_GPTs.html
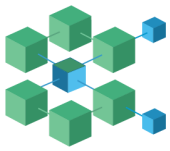
Milestone 3: Ecosystem Expansion and Integration

Objective: Identify and integrate new initiatives into the Koios ecosystem, develop and test necessary changes, conduct performance testing, and coordinate closely with projects for successful integration.

Achievements:
- Expanded the Koios ecosystem by integrating multiple new initiatives.
- Developed and implemented necessary changes to support these integrations.
- Performed comprehensive performance testing to ensure that new integrations operated smoothly within the existing ecosystem.
- Worked closely with partner projects to ensure successful and seamless integration.
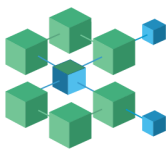
Milestone 4: Public Instance Maintenance and Upgrade Coordination

Objective: Maintain and track public instances across multiple networks, create transparent upgrade plans, and coordinate releases across the Cardano network.

- **Achievements:**
    - Monitored and maintained public instances across various blockchain networks.
    - Developed and communicated transparent upgrade plans to the community and stakeholders.
    - Coordinated and executed upgrades across the Cardano network, ensuring minimal disruption and maximum efficiency.

This bar chart visually represents the frequency of updates and maintenance activities on a weekly basis. Each bar corresponds to a specific week, starting from September 2023, with the height of the bar indicating the number of updates or maintenance activities performed during that week. The bars are colour-coded by month, allowing for quick identification of periods with high activity.

Key observations include:

High Activity Periods: The chart shows several spikes, particularly in Week 16 (April) and Week 21 (May), indicating concentrated periods of high development and maintenance activity.

Consistency: The project demonstrates consistent activity throughout the timeline, with frequent updates across most weeks, reflecting the ongoing commitment to maintaining and improving the system.

Seasonality: There is a noticeable increase in activity during the spring (April-May) and late summer (August-September), suggesting that these periods may be strategically important for the project's development cycles.

Milestone 5: Community Support and Feedback Collection

Objective: Provide assistance across various Koios projects and tools, respond to queries, and collect user feedback across multiple channels, including support forums and GitHub issues.

- **Achievements:**
    - Delivered consistent support across all Koios projects and tools, addressing community queries and providing guidance.
    - Actively collected and analysed user feedback through forums, GitHub issues, and direct communication.
    - Used feedback to inform ongoing development and improvements, ensuring that community needs were met.
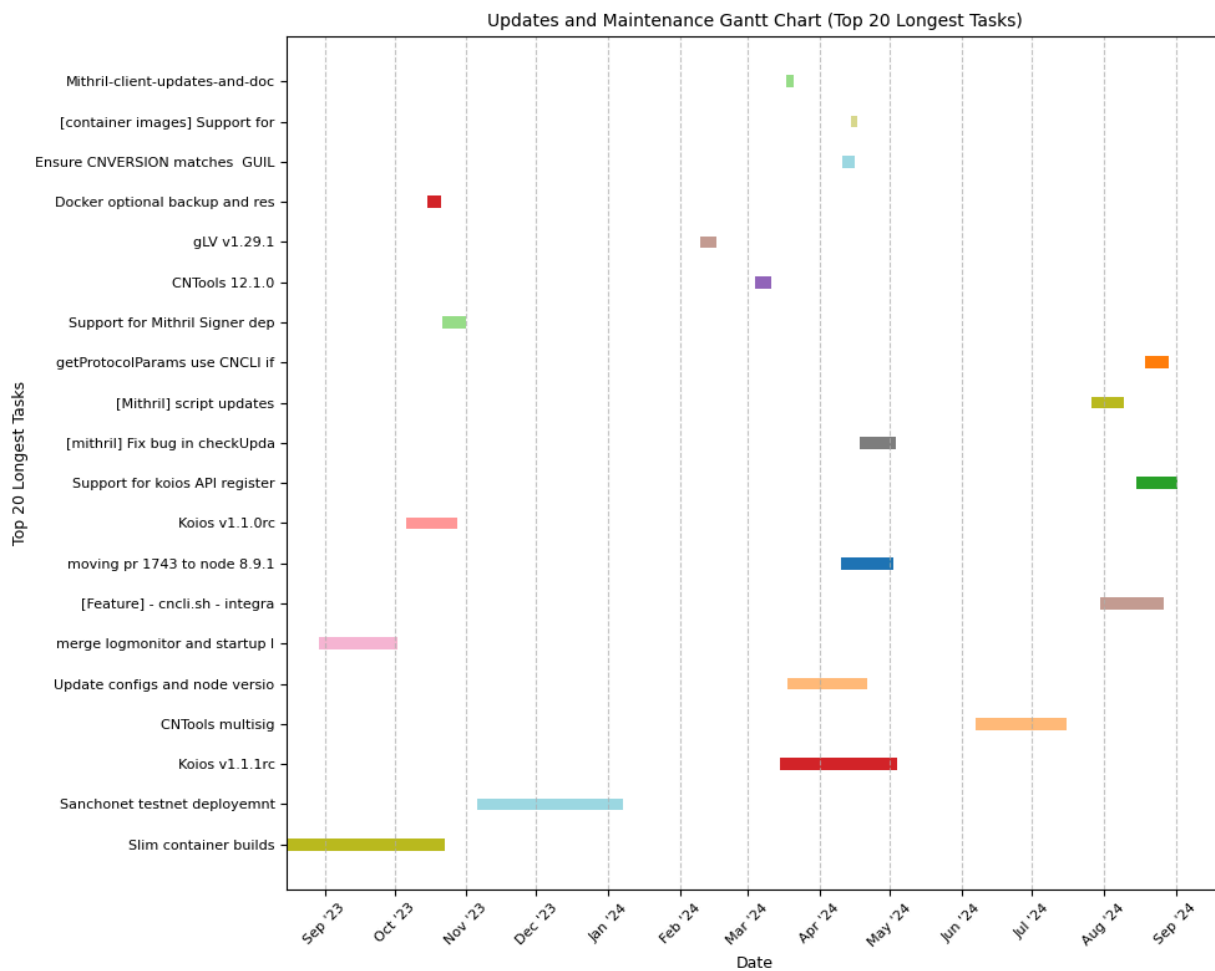
The tasks are sorted by duration, providing insight into the most time-consuming aspects of the project. This Gantt chart displays the top 20 longest tasks, measured by duration from start to completion. Each bar represents a task, colour-coded for visual distinction, with the x-axis indicating the timeline from September 2023 to September 2024.

Collaborations and Partnerships

The success of the Koios Evolution project was bolstered by strategic collaborations with key partners. These partnerships not only expanded the reach of Koios API but also enhanced its functionality and impact within the decentralized ecosystem. Some of the notable collaborations include:

- **Laravel PHP Client**: Integration of the Laravel PHP Client made it easier for developers to connect and innovate within our ecosystem.
- **Gero Labs**: Pushed the boundaries of decentralized science and technology, contributing cutting-edge research and solutions.
- **Cardano Foundation**: Brought foundational support and expertise, strengthening the overall project infrastructure.
- **DCOne Crypto**: Enhanced security and transparency, vital components of a trustworthy decentralized ecosystem.
- **Guild Operators**: Empowered communities by providing decentralized governance tools.
- **NMKR**: Redefined token creation and NFT infrastructure, contributing to the robustness of the Koios ecosystem.
- **Ray Network**: Delivered advanced blockchain solutions, paving the way for future developments.
- **Rosen Bridge**: Connected various blockchain networks, expanding the possibilities within our ecosystem.
- **Skulliance**: Infused creativity and collaboration, fostering innovation across different domains.
- **Stakepool Operator Scripts**: Streamlined operations for the Cardano community, enhancing user experience.
- **Tabulali**: Provided data-driven insights, essential for informed decentralized decision-making.
- **Tekmirio**: Developed robust decentralized applications, reinforcing the infrastructure of the Koios ecosystem.

Projects building on Koios

A subset of projects currently using Koios.

adabox.io

Gero Labs

Building On Cardano

CardaStat

Cardano Foundation

DCOne Crypto

Guild Operators

Dandelion

Eternl

Mesh SDK

MusicBox

NMKR

Poolpeek

Raw Cardano Explorer

Ray Network

Rosen Bridge

Skulliance

Stakepool Operator Scripts

Tabulali

Tekmirio

TosiDrop

VESPR

Performance Metrics and Reliability

Throughout the duration of the project, Koios gRest has maintained a high level of reliability and performance. Our monitoring systems, powered by Prometheus, have consistently demonstrated exceptional uptime and responsiveness. This reliability is a testament to the robust architecture and diligent maintenance efforts by our team.

- **Uptime Consistency**: Koios gRest has maintained over 99% uptime, ensuring that our services are always available when needed.
- **Performance Metrics**: Key performance indicators have shown sustained efficiency and speed, even as the system has scaled.

Repository Traffic (Views and Unique Visitors)
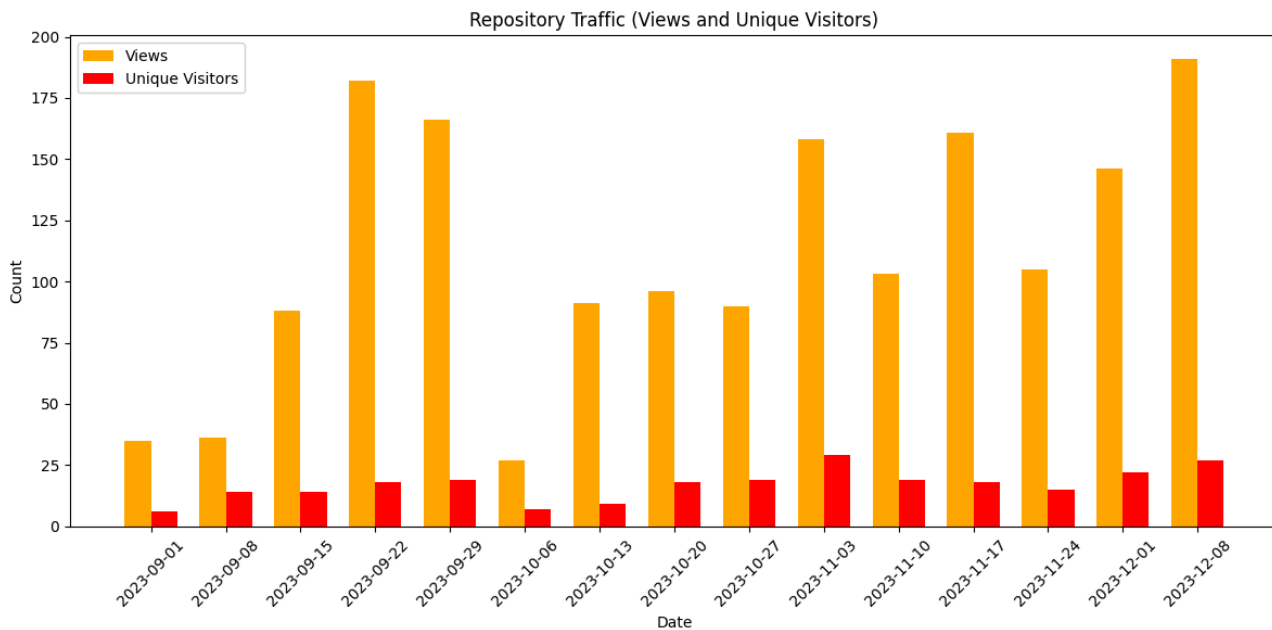
This bar chart illustrates the **Repository Traffic** over time, comparing the total number of views (in orange) with the unique visitors (in red) for each date. The chart highlights significant spikes in traffic, particularly around mid-September and early December 2023, indicating periods of heightened interest in the project. The difference between views and unique visitors suggests that many users return to the repository multiple times, reflecting sustained engagement with the content.

Commit Frequency Heatmap
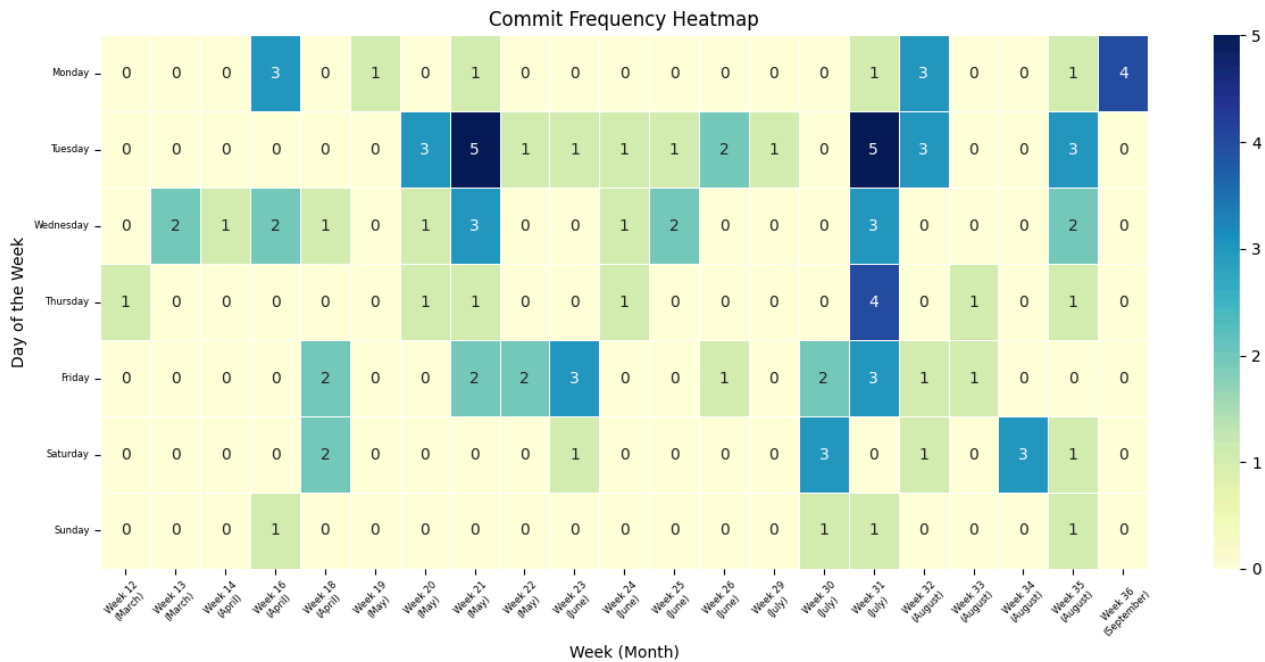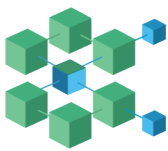
The image above is a Commit Frequency Heatmap, representing the distribution of code commits over different days of the week across several weeks of the year. The x-axis shows the week number, with each week also labelled with its corresponding month, while the y-axis displays the day of the week (from Monday to Sunday). The colour intensity of each cell in the heatmap indicates the number of commits on that particular day of the week for the given week.

Key Observations:
Commit Distribution:
The highest frequency of commits tends to occur on Tuesdays and Fridays, as indicated by the darker cells (e.g., in Week 11 and Week 22). These days appear to be key periods of activity for development.
Wednesdays and Thursdays also see a reasonable level of activity, but it's more moderate compared to the peaks seen on other days.
The weekends (Saturday and Sunday) have very low to almost no commit activity, reflecting typical work schedules in many development teams, where weekend work is less frequent.
Peak Weeks:
The heatmap shows particular spikes in development activity during Week 11 (March), Week 16 (April), and Week 22 (May), where commit frequency reaches its highest levels, particularly on Tuesdays and Fridays.
Week 31 (July-August) and Week 36 (September) also show heightened activity, suggesting important milestones or deadlines during these periods.
Trends in Activity:
The darker cells on the heatmap suggest periods of intense development. The distribution across multiple weeks suggests that the project follows a consistent rhythm of development with higher bursts of activity during some weeks, possibly tied to significant updates or releases.

Conclusion:
This heatmap provides a clear visual representation of the team's work patterns. The peaks in activity during certain weeks and on specific days suggest planned sprints or deadlines driving more commits. This level of detailed tracking helps project managers and development teams optimise workflows, allocate resources efficiently, and ensure a balanced approach to development across the project timeline.
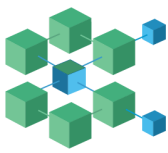
Community Engagement and Support

The Koios Evolution project has been community-driven from the start. We have maintained an open line of communication with our users, providing support and gathering feedback to continually improve our offerings.

- **Support Channels**: We have actively engaged with the community through GitHub, forums, and direct support channels, ensuring that all queries were addressed promptly.
- **Feedback Loop**: User feedback has been critical in shaping the direction of the project, with many improvements directly resulting from community suggestions.

The stacked bar chart provides a clear overview of the volume and types of community interactions over time, categorised by m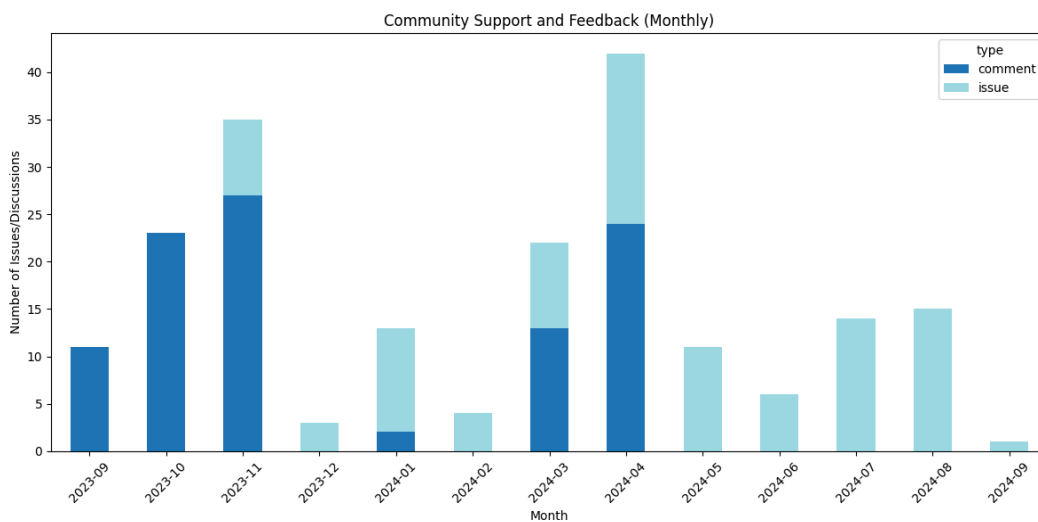onth. The chart differentiates between issues and comments, allowing us to observe how community support and feedback have evolved.

Key observations include:

Activity Peaks: Significant spikes in activity are visible in November 2023 and April 2024, where both issues and comments show a marked increase. This suggests heightened engagement during these periods, possibly correlating with major project updates or releases.

Sustained Engagement: The chart shows consistent engagement across several months, indicating that the community is actively participating in the project's development and maintenance processes.

Diversity of Interactions: While issues dominate the interactions, comments also contribute significantly, particularly during peak periods. This highlights an active dialogue within the community, where members are not only raising issues but also engaging in discussions to resolve them.

Accumulated Closed Issues and Open Issues by Month (Last Year)

Community Growth (Stargazers, Forks, Watchers)
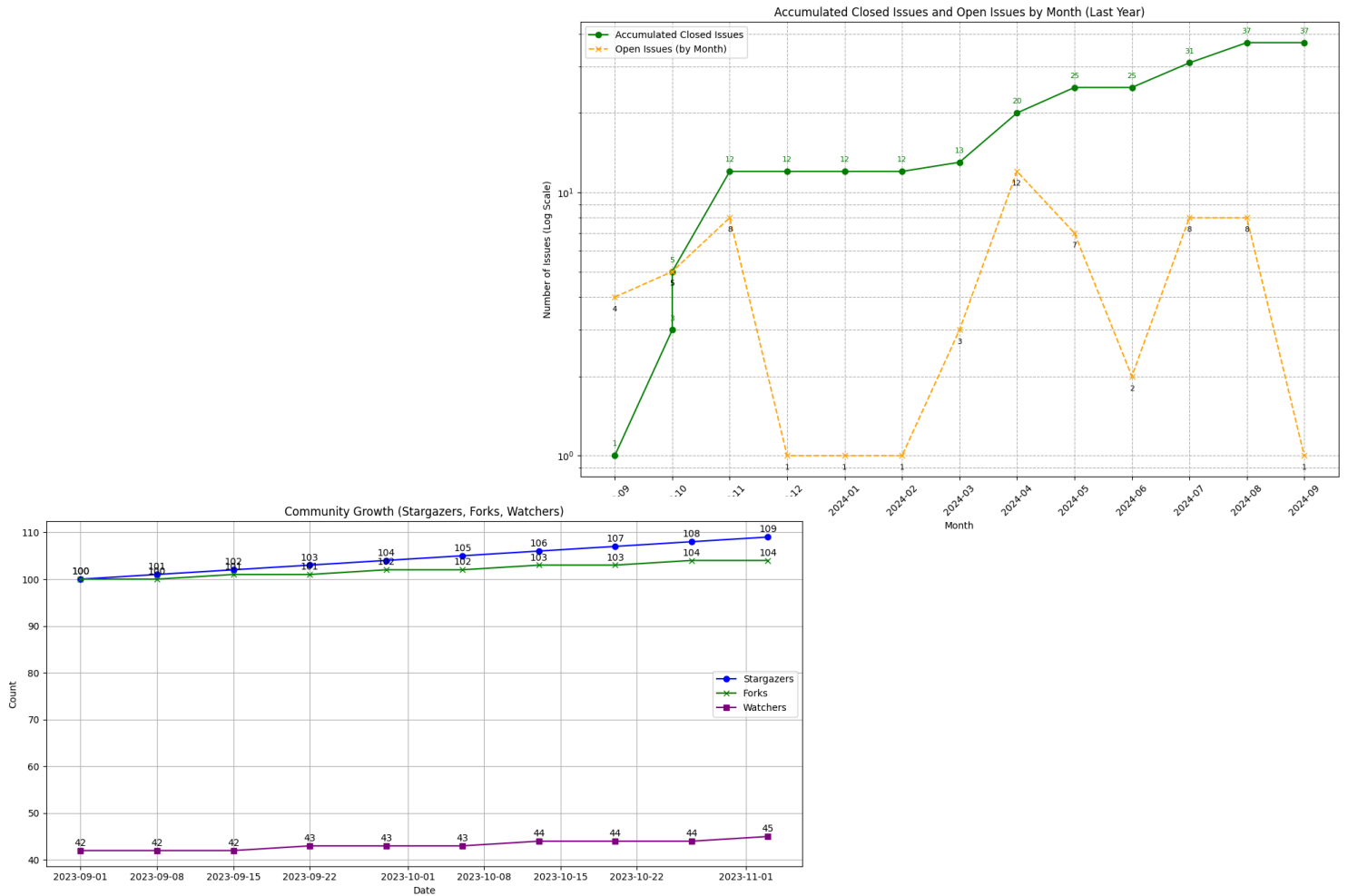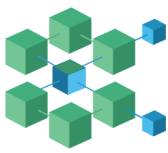
Accumulated Closed Issues and Open Issues by Month (Last Year)
This graph presents two key metrics related to issue management in the Koios API project over the past year:

Accumulated Closed Issues (green line): The upward trajectory of the green line indicates a steady increase in the number of issues that have been closed over the course of the year. Starting with just 1 issue closed in September 2023, this number has consistently grown, reaching 37 by September 2024. The trend reflects a clear and continuous effort to address and resolve issues, contributing to the project's overall stability and progress.
Open Issues by Month (orange dashed line): The orange line fluctuates, indicating the dynamic nature of issue creation and resolution. There are distinct spikes in open issues during November 2023 and April 2024, suggesting periods of increased complexity or activity that introduced new challenges. However, the swift decline in open issues after these spikes highlights the team's effectiveness in managing and resolving these challenges.

Overall, the graph demonstrates the team's commitment to maintaining quality and stability through effective issue management, ensuring that open issues are addressed promptly and efficiently over time.

**Community Growth (Stargazers, Forks, Watchers)**
This graph tracks three key metrics that reflect the growing interest and participation in the Koios API project:

Stargazers (blue line): The number of stargazers shows a steady increase, starting at 100 in early September 2023 and rising to 109 by November 2023. This reflects growing recognition and approval from the community as more users "star" the repository to show support or follow its progress.
Forks (green line): Forks, which represent active engagement by developers working with or modifying the project, also demonstrate a positive trend. The count increases from 100 to 104 over the same period, indicating that more developers are contributing to or building upon the Koios API.
**Watchers** (purple line): The number of watchers, while increasing more modestly from 42 to 45, still indicates a dedicated group of users who are actively monitoring the project's updates and progress.

Together, these metrics highlight the project's growing community of contributors and supporters, underscoring the increasing visibility and

relevance of the Koios API in the decentralized ecosystem.
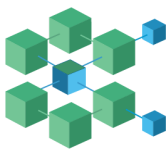
Social Statistics:

Telegram
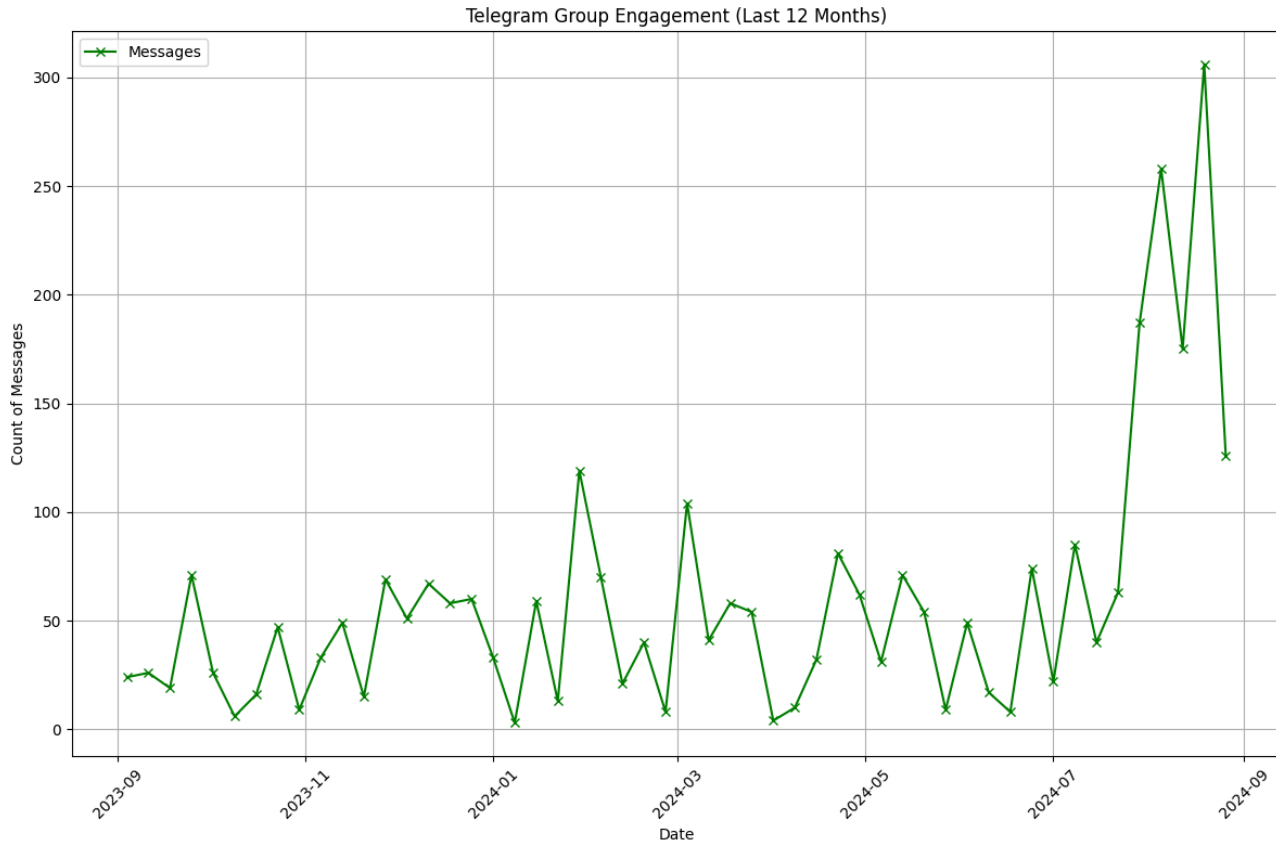
The graph represents the Telegram Group Engagement over the last 12 months. The y-axis shows the count of messages while the x-axis indicates the time span, beginning from September 2023 and continuing through September 2024.
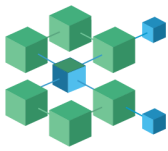
Key Observations:

Steady Message Activity: The graph shows fluctuating yet consistent activity between September 2023 and mid-2024, with the message count generally remaining between 30 and 100 messages per week. This indicates steady engagement within the group.

Notable Spikes: There are clear peaks of increased activity during several periods, especially in January 2024, March 2024, and July-August 2024, where the message count exceeds 150 messages. These spikes could correspond to significant discussions, project updates, or other events that generated increased communication within the group.

Recent Surge: From July to September 2024, the message count shows a marked increase, culminating in a peak of nearly 300 messages before dropping back slightly. This indicates a recent surge in group activity, suggesting increased interaction or engagement due to recent events, possibly project milestones or major announcements.

Engagement Trend: Overall, the trend indicates a healthy and growing engagement pattern, with the latter half of the year seeing more frequent spikes in messages, possibly indicating greater interest and participation from group members over time.

This visualisation suggests an active and evolving community, with periods of heightened engagement likely corresponding to key moments in the project's lifecycle.

YouTube

Views	Watch time (hours)	Subscribers
259 ⬆	**3.9** ⬆	**+7**
28% more than 30 Apr – 31 Dec 2023	20% more than 30 Apr – 31 Dec 2023	

See more
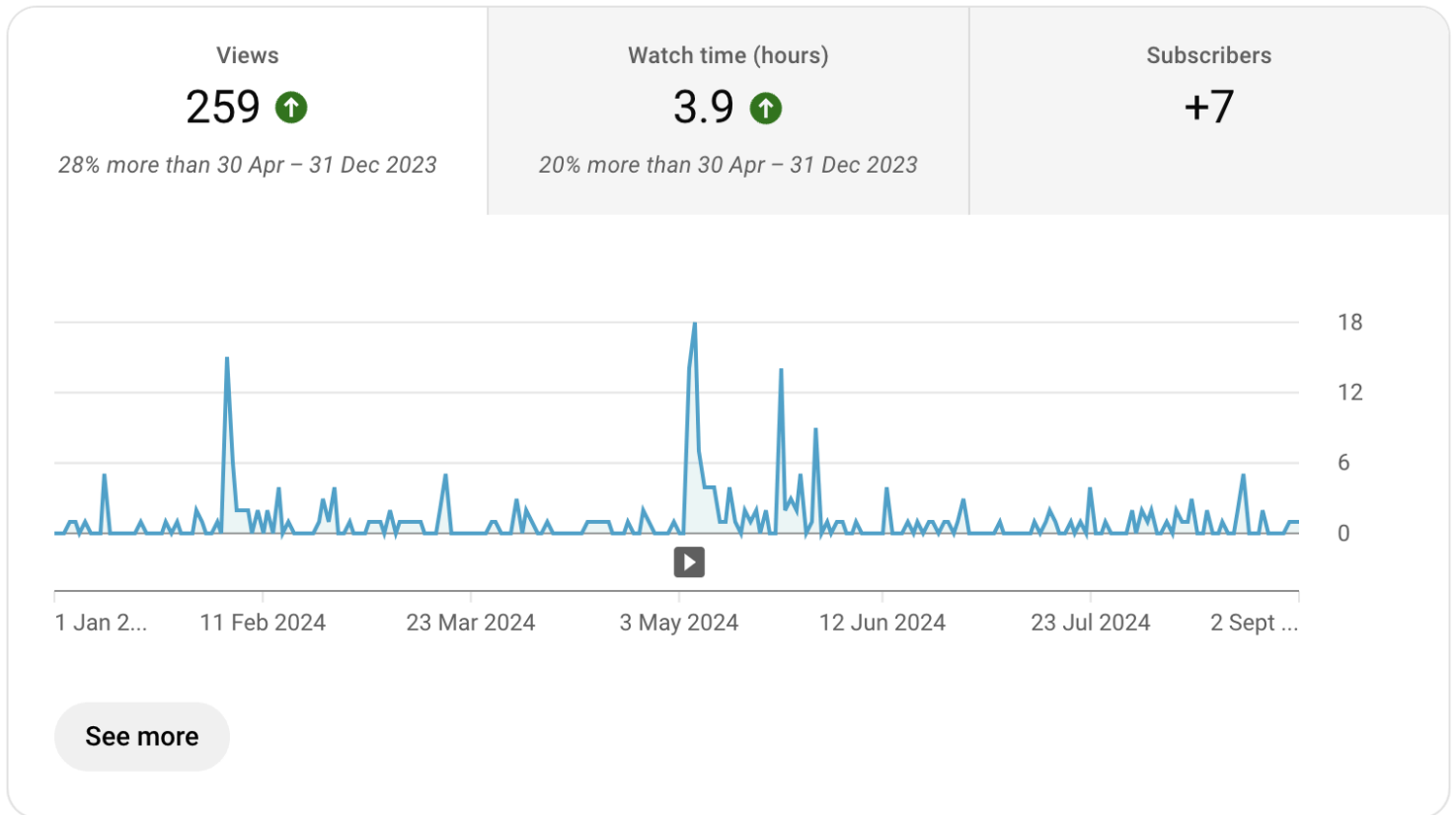
The image showcases YouTube channel analytics over a defined time period, likely from January 2024 through September 2024, as indicated by the x-axis. The data includes key metrics such as Views, Watch Time, and Subscribers, along with a line graph visualizing activity across the time span.

Key Observations:
Views: The channel has accumulated 259 views, which is an increase of 28% compared to a previous period (April 30 to December 31, 2023). The line graph shows spikes in viewership at various points, particularly in early February, early May, and mid-June 2024. These spikes could correspond to the release of popular content or special events on the channel.
Watch Time (Hours): The Watch Time stands at 3.9 hours, which is a 20% increase from the previous period. The spikes in watch time align with the peaks in views, particularly in May and February, suggesting these periods had more engaging content that kept viewers watching longer.
Subscribers: The channel gained +7 subscribers during the time period shown, reflecting steady growth. This gain could be tied to the content driving the viewership and watch time spikes.

Conclusion:
The data suggests that the YouTube channel has experienced healthy growth in views, watch time, and subscribers, with noticeable engagement spikes in specific months, particularly early February and May 2024. This indicates effective content strategy or events driving user interest and engagement, contributing to an upward trend in overall channel performance.
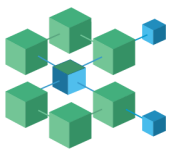
X

Koios

@CardanoKoios

A consistent query layer for Cardano's developers to build upon, with multiple, redundant endpoints that allow for easy scalability.

◎ DAO   🔗 koios.rest   🗓 Joined October 2021

29 Following   **1,310** Followers

| Posts | Replies | Highlights | Articles | Media | Likes |

📌 **Pinned**

Koios @CardanoKoios · Aug 30   •••
Finalised release 1.2.0 is now out. Kindly follow the release notes for details (incl. changelog) below (and follow koios 1.2.0a changelog too - in case missed).
github.com/cardano-commun...

> **Koios** @CardanoKoios · Aug 24
>
> Koios v1.2.0a release notes and expected schedule is out, kindly follow the release notes for details (incl. changelog) below
> github.com/cardano-commun...
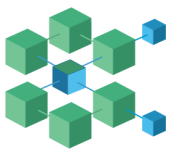
💬   ⟲ 10   ♡ 28   ‖ 1.5K   🔖 ⬆

The Koios X (formerly Twitter) account has shown steady growth in its follower base, reaching 1,310 followers as of the most recent snapshot. The platform is actively engaging its community, particularly through important updates like the release of Koios v1.2.0 on August 30th, which received significant attention with 28 likes, 10 retweets, and 1.5K views. This steady follower increase reflects the growing interest and engagement from the developer community, who rely on Koios as a critical layer for Cardano's blockchain infrastructure. This growth not only highlights the platform's increasing popularity but also underscores its relevance in providing essential, scalable solutions for decentralized technology.

API Service Status

This chapter presents key Prometheus metrics that track the performance and health of our Koios API services over the last 80 days.

Due to regular server maintenance, which resets these metrics, the data displayed only reflects active service periods in between restarts. Despite the resets, the metrics provide useful information about uptime, request handling, and overall service reliability. We will concentrate on three key metrics to demonstrate the current state of our API.
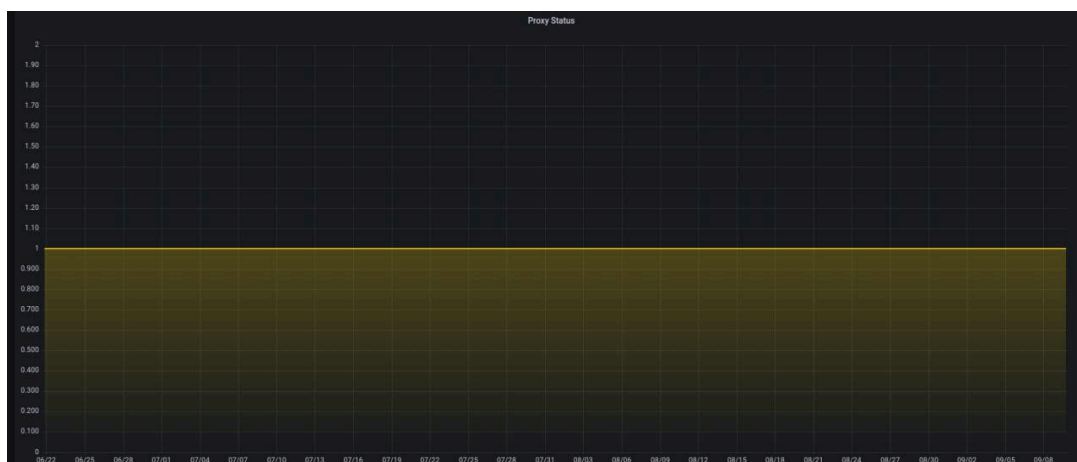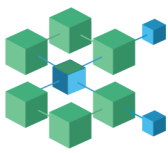

Proxy Status:

The first chart depicts a stable proxy status for the Koios API service. The yellow line consistently remains at the value of 1, indicating that the proxy is operational with no disruptions. This consistent performance indicates that the system has been operating normally, with no significant outages or failures during the time period shown. The proxy remains extremely dependable for users.
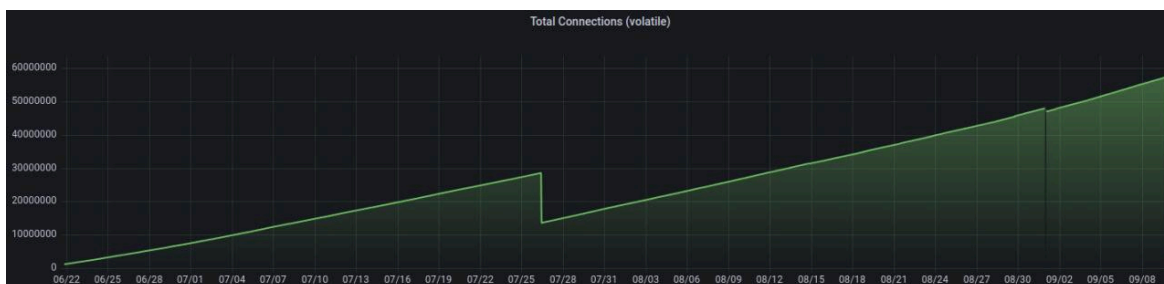
Total Connections (Volatile):
The second chart shows the total number of connections to the Koios API service in the last few months. The number of connections is steadily increasing, indicating that the service is becoming more popular and in high demand. The graph shows clear steps that reflect incremental spikes in usage, with the highest number of connections approaching 60 million. This growth indicates an expanding user base and ongoing API requests to the system.
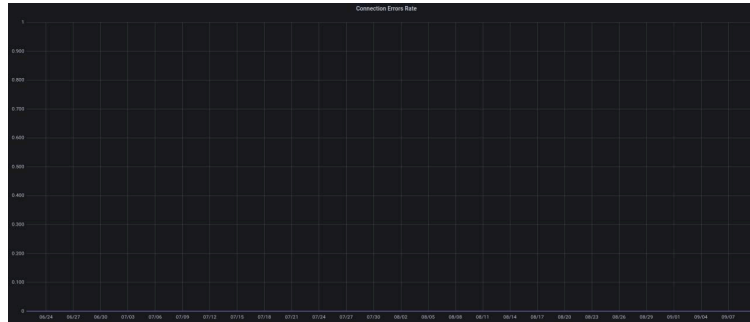
Connection Errors Rate:
The third graph depicts the error rate in connections to the Koios API service. The chart is essentially flat at zero, indicating that there were no *connection* errors (excludes query and rate limit errors on user end) during the observation period. This demonstrates the service's high reliability and stability, as it has provided an error-free environment for users interacting with the API.

These charts highlight the Koios API's strong performance, minimal disruption, and increasing user engagement over time.

Conclusion and Future Outlook

The "Koios Evolution: Enhancements, Infra Support & Maintenance" proposal met its objectives by significantly improving the Koios API, strengthening its infrastructure, and providing constant support to the community. As we move forward, the project's foundations will continue to promote the growth and evolution of decentralised technologies.

Looking ahead, we are committed to continued innovation, extending our collaborations, and ensuring that the Koios API remains a valuable resource for developers and communities in the decentralised ecosystem.
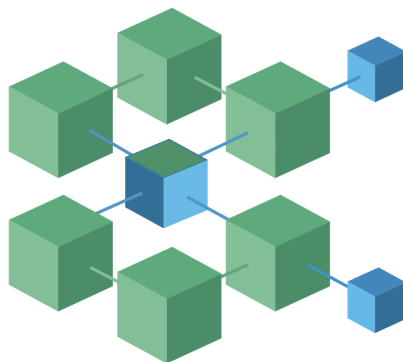
Empower your Cardano projects with our elastic API services

Thank you for being an integral part of this journey. Together, we have not only achieved our goals but have also paved the way for a future defined by decentralized innovation.