Monthly Maturity Report: October 2024

Prepared by:
Christian Taylor
Head of Open Source Office, Intersect
&
Terence “Tex” McCutcheon
Open Source Program Manager, Intersect

Date:
November 1, 2024

Organization:
Open Source Committee
Intersect Member Based Organization
Cardano Ecosystem

Review Process	Approval
1st Pass: Tex M, OSO PM	✅**Approved**
2nd Pass: Christian T, Head of OSO	✅**Approved**

INTERSECT™

Summary:

In October 2024, the Cardano open-source ecosystem maintained a **steady development pace**, while showing signs of **focus, stability, and internal consolidation**. Commit activity increased slightly from the prior month, even as the number of active authors declined — suggesting that a smaller core group handled more of the workload. Issue submissions fell significantly, as did the number of repositories receiving issues, pointing to a reduced testing or QA footprint. However, code changes remained distributed across many key repositories, and pull request and contribution volume held stable. Notably, smaller contributors like Tweag and Quviq saw sharp increases in engagement, and ecosystem participation extended across more repositories. Collectively, the data suggests that the Cardano engineering ecosystem is maturing, **trimming surface-level activity while reinforcing depth and continuity** in its core projects.

General Observations

Organizational Contributions:

- **Input Output (IOHK):** Maintained its leadership position with 913 contributions, slightly up from 879 in September. While added and removed lines decreased dramatically, the breadth of modified files and sustained commit activity indicate a period of **refinement and stabilization**.
- **Tweag:** Jumped from 28 to 111 contributions — a nearly 4x increase — driven by a small team, suggesting **focused engagement or a dedicated delivery sprint**.
- **Well-Typed:** Contributions dropped by 31% (151 to 104), suggesting a **winding down of recent efforts** or shifting team focus.
- **Cardano Foundation and Quviq:** Both posted major percentage gains in contributions, albeit from small baselines, highlighting **renewed or expanded ecosystem participation**.

Geographical Distribution of Commits:

- **UTC +2 (Central Europe):** Remained dominant with 533 commits, slightly down from 542 — maintaining its role as the core contributor zone.

- **UTC +1 (Western Europe):** Saw a dramatic 102% increase in commits, pointing to heightened activity in that region.

- **UTC -6 and -4 (North America):** Activity remained stable, with a mild decline in UTC -6 and modest growth in UTC -4.

Project-Specific Insights:

- **cardano-ledger.git** led all repositories with 185 commits and a 46.8% increase over September, indicating **major development attention**.

- **plutus.git** maintained high activity with 113 commits and remained the most modified in terms of estimated file changes.

- **cardano-cli.git** saw reduced issue volume (–37.5%) and commits, reflecting **potential stabilization or feature freeze**.

- **ouroboros-network.git** saw a 23% increase in modified files, reinforcing its importance in ongoing protocol work.

- **cardano-node.git** dropped slightly in both commits and file-level impact, possibly signaling a post-release cooldown.

Repository Activity:

- Pull requests rose from 419 to 437, while touched repositories increased from 20 to 21 — **suggesting broader integration efforts**.

- The number of contributors submitting PRs fell by 12.5%, reinforcing the trend of **higher output from fewer developers**.

- Total issues dropped by nearly 28%, with affected repositories shrinking from 30 to 11 — indicating a possible **reduction in testing scope or triage volume**.

- Despite the drop, resolution times improved, showing that existing teams are handling issues **more efficiently**.

Conclusion

The October 2024 report reflects a **phase of concentrated, high-efficiency development** across the Cardano open-source ecosystem. A smaller, dedicated group of contributors drove much of the progress, while peripheral engagement declined. Fewer repositories received issues, but PR and commit activity remained healthy. Key infrastructure components like `cardano-ledger`, `plutus`, and `ouroboros-network` continued to evolve steadily. As the ecosystem matures, sustaining this momentum while **diversifying contributors and enhancing QA coverage** will be critical to supporting long-term resilience and progress.

---

1. Github Overview

This section provides a comprehensive overview of activities and dynamics within the Github platform. It encompasses various metrics and statistics concerning the usage, engagement, and performance of projects and contributors.

Summary:

October 2024 – 1,207 commits made by 64 authors in 21 repositories.

GitHub activity increased in terms of total commits, rising 10.7% from September. However, the number of active authors dropped by nearly 10%, suggesting that **fewer contributors were responsible for more concentrated work**. The number of active repositories remained flat at 21, indicating continued focus on a **stable set of strategic codebases**.

Metric	September 2024	October 2024	Change
Commits	1,090	1,207	+10.7%
Authors	71	64	−9.9%
Active Repositories	21	21	+0.0%

Observations:

- The increase in commits alongside a reduction in authors suggests **more output per contributor**, possibly due to internal sprints or dedicated release work.

- The flat repository count reinforces a **focused development strategy**, where efforts are being maintained within a stable scope of projects.

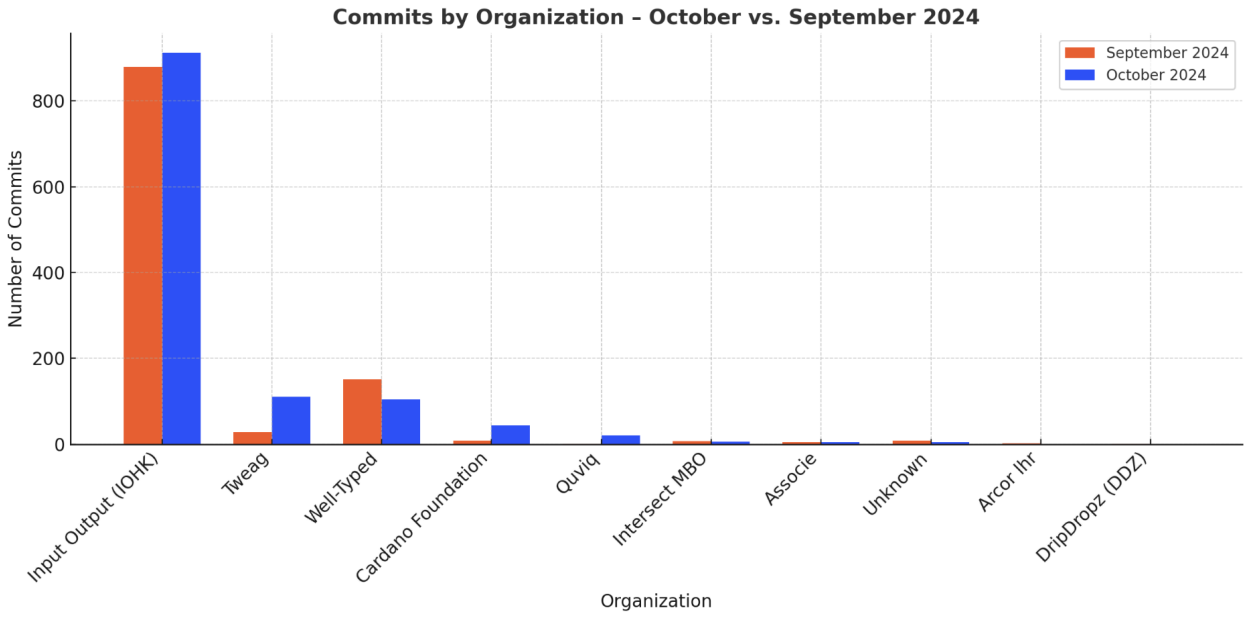
- October marks a return to **higher code throughput**, reversing the slowdown seen in September.

1.a) Organization Activity

Here is the data for how different organizations within the Cardano ecosystem were contributing to open-source projects during the current timeframe. Complete data available here in Bitergia.

Top Organizations – October 2024

Organization	Commits (Oct)	Commits (Sept)	Change (%)	Authors	Touched Files	Added Lines	Removed Lines
Input Output (IOHK)	913	879	+3.9%	49	5,058	88,924	95,265
Tweag	111	28	+296.4%	1	201	4,203	3,795
Well-Typed	104	151	−31.1%	6	436	11,411	8,021
Cardano Foundation	44	8	+450.0%	1	189	3,794	852
Quviq	20	1	+1900.0%	2	196	1,109	4,156



Observations:

1. **IOHK** maintained its leadership with a modest increase in commits (+3.9%) and nearly **5,100 files modified**, despite significantly lower added and removed lines compared to September — indicating a **code stabilization phase**.

2. **Tweag** ramped up considerably, jumping from 28 to 111 commits. Though driven by a single author, the increase suggests focused contribution to a specific initiative or sprint.

3. **Well-Typed's** contributions declined by 31%, pointing to a potential **pause or project completion phase**, though activity remained high relative to other orgs.

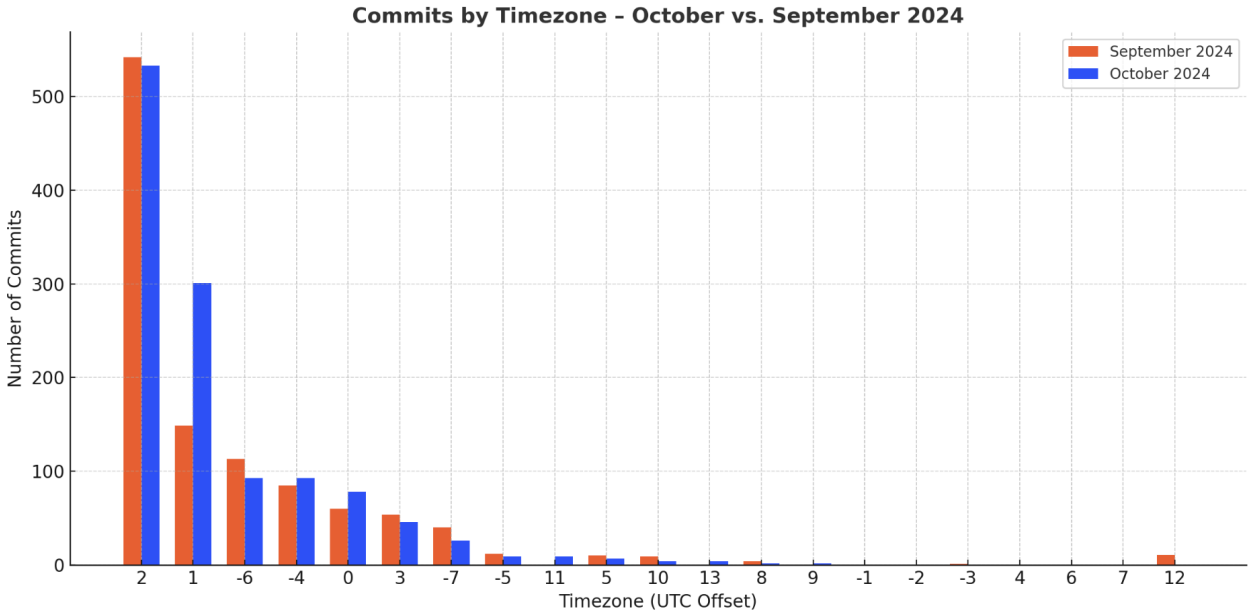
4. **Cardano Foundation** contributions grew substantially from 8 to 44 commits, and Quviq also returned with a notable increase, showing renewed or first-time engagement in the codebase.

1.b) Commits by Timezone

Here is the data for commits per timezone. This view is important to understand how the contributors are spread geographically. Complete data available here in Bitergia.

October 2024 – Commit activity remained globally distributed, but notable regional changes were observed. UTC +1 saw the **largest surge in commits**, more than doubling from September. Conversely, UTC +2 (Central Europe) remained the most active zone but experienced a slight decline. UTC 0 also saw a healthy 30% increase in activity.

Timezone (UTC ±)	Commits (Sept)	Commits (Oct)	Change (%)
+2	542	533	−1.7%
+1	149	301	+102.0%
-6	113	93	−17.7%
-4	85	93	+9.4%
0	60	78	+30.0%



Observations:

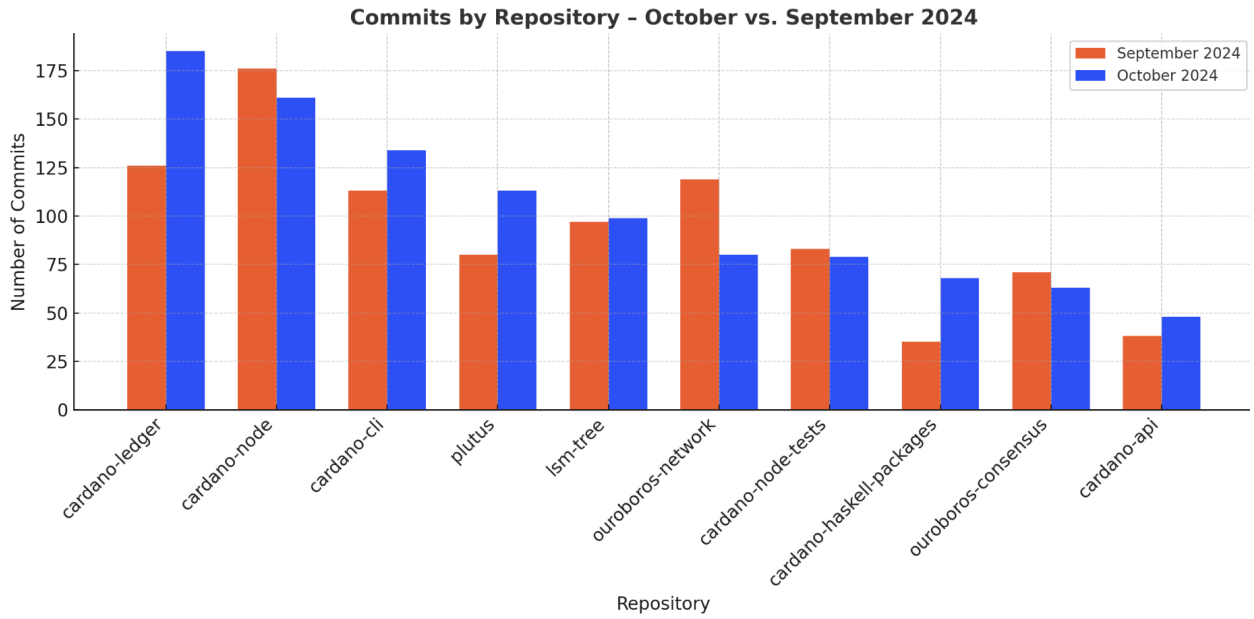
- **Central Europe (UTC +2)** remains the dominant timezone, contributing nearly half of all commits — though with a modest decline from the previous month.
- **Western Europe (UTC +1)** saw a dramatic increase (+102%), likely due to focused contributions from one or more organizations or contributors concentrated in that zone.
- **North American activity (UTC -6)** declined 17.7%, possibly reflecting the end of a sprint cycle or seasonal dip.
- **UTC 0 and -4** saw healthy increases, suggesting improved engagement from contributors in those regions.

1.c) Per Repository Activity

This section shows activity for each repository in Cardano open-source. Complete data available here in Bitergia.

Top Repositories – October 2024

Repository	Commits (Oct)	Commits (Sept)	Change (%)
cardano-ledger.git	185	126	+46.8%
cardano-node.git	161	176	−8.5%
cardano-cli.git	134	113	+18.6%
plutus.git	113	80	+41.2%
lsm-tree.git	99	97	+2.1%



Observations:

1. **cardano-ledger.git** became the most active repository in October, overtaking cardano-node with a 46.8% increase in commits — signaling **renewed focus on ledger logic or features**.

2. **cardano-node.git** saw a slight decline in activity (−8.5%) but remained highly active, indicating **continued core maintenance** with possibly fewer but more targeted updates.

3. **cardano-cli.git** and **plutus.git** both posted strong growth, suggesting **CLI tooling and smart contract components** received intensified attention.

4. **lsm-tree.git** activity remained stable, hinting at **ongoing lower-level infrastructure refinement**.

---

2. Areas of Code

This category outlines the diverse areas and aspects of code development and management within the Github environment.

Summary

October 2024 – 8,652 files modified by 64 authors, with 151K lines of code added and 148K removed.

Compared to September, modified files increased slightly, but the volume of added and removed lines **dropped sharply**. This signals a shift from heavy feature development to **refactoring, cleanup, or smaller targeted updates**. Author count also declined by nearly 10%, indicating more focused contribution from fewer individuals.

Metric	September 2024	October 2024	Change
Modified Files	8,148	8,652	+6.2%
Authors	71	64	−9.9%
Lines Added	643,093	151,453	−76.4%
Lines Removed	971,208	148,274	−84.7%

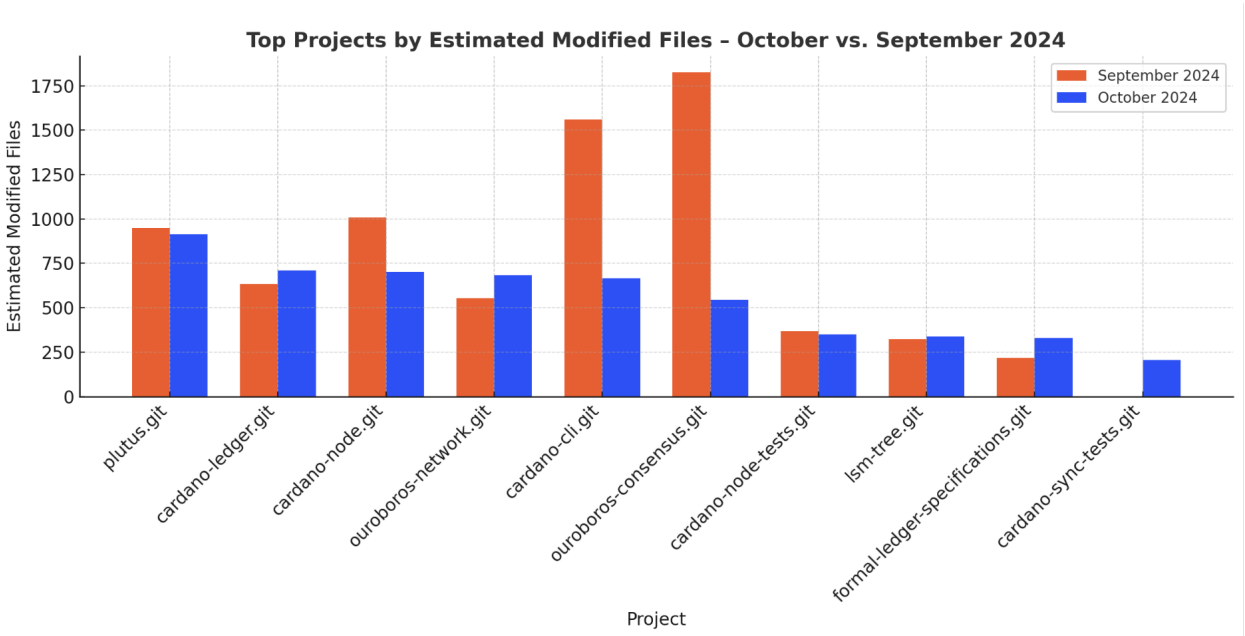
Observations:

- The sharp drop in code churn (both added and removed lines) suggests teams are focused on **stabilization, documentation, or polishing work** rather than pushing large-scale features.
- Despite the lower author count, more files were touched, indicating **broad-scope contributions from fewer but more active developers**.
- This pattern is consistent with a **post-release or integration phase**, where incremental improvements dominate.

2.a) Projects

Top Projects – October 2024 (Estimated Modified Files)

Project	Files (Oct)	Files (Sept)	Change (%)
plutus.git	914	948	−3.6%
cardano-ledger.git	710	634	+12.0%
cardano-node.git	702	1,009	−30.4%
ouroboros-network.git	683	555	+23.1%
cardano-cli.git	667	1,559	−57.2%



Observations:

1. **plutus.git** remained the most active by file changes, though it declined slightly (−3.6%), suggesting a **stable yet consistently evolving codebase**.

2. **cardano-ledger.git** grew in scope, with a 12% increase in file modifications, reinforcing its centrality in October's development focus.

3. **cardano-node.git** and **cardano-cli.git** both saw sharp declines, pointing to a **possible phase-out or completion of larger update cycles** during the prior month.

4. **ouroboros-network.git** experienced strong growth (+23.1%), reflecting **heightened work on core network architecture**.

3. Issues

This segment revolves around the identification, tracking, and resolution of issues within Github projects. It encompasses discussions on problem-solving methodologies, issue management practices, and related metrics.

Summary

October 2024 – 104 issues submitted by 42 contributors across 11 projects, with an average open time of 71 days.

Compared to September, **all metrics declined**, with total issue volume dropping by 28% and unique submitters falling by a similar margin. Most notably, the number of projects receiving issues shrank by **63%**, suggesting a **narrowing focus in testing or feedback activity**. However, the average issue resolution time improved slightly, pointing to **better triage performance** for the issues that were submitted.

Metric	September 2024	October 2024	Change
Total Issues Submitted	144	104	−27.8%
Unique Submitters	59	42	−28.8%
Avg. Time Open (Days)	83.4	71.4	−14.4%
Distinct Projects	30	11	−63.3%

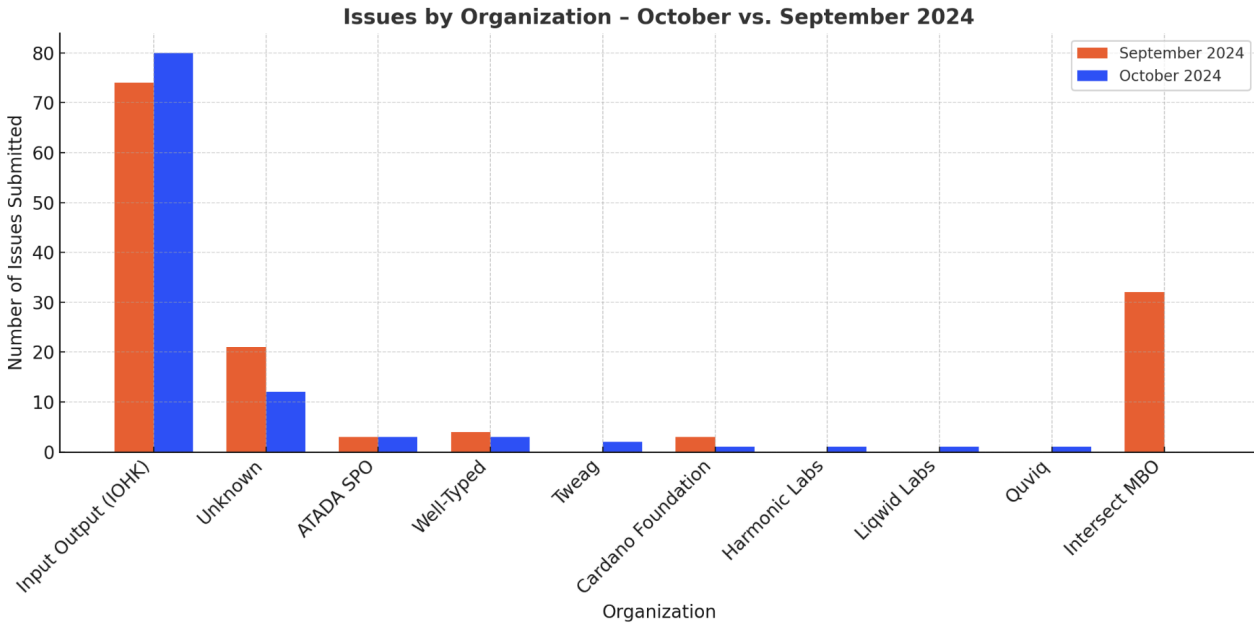
Observations:

- **Issue volume fell across the board**, with fewer contributors and projects involved in reported QA or feedback loops.
- The **drop in open time** reflects more efficient resolution for submitted issues, despite the lower overall engagement.
- The dramatic decline in distinct affected projects could indicate a **shift toward internal consolidation** or fewer releases requiring user testing.

3.a) Organizations

Top Organizations – October 2024

Organization	Issues (Oct)	Issues (Sept)	Change (%)	Median Open (Oct)	Median Open (Sept)
Input Output (IOHK)	80	74	+8.1%	71.5 days	82.3 days
Unknown	12	21	−42.9%	66.9 days	77.4 days
ATADA SPO	3	3	0.0%	89.6 days	81.6 days
Well-Typed	3	4	−25.0%	70.5 days	82.6 days
Tweag	2	0	+200.0%	58.0 days	—



Observations:

1. **IOHK** remained the dominant submitter of issues, with a slight increase in volume and a notable **drop in average resolution time**, indicating faster triage or response.

2. **Unknown contributors** (likely unaffiliated community members) submitted fewer issues, but still ranked second, showing consistent external engagement.

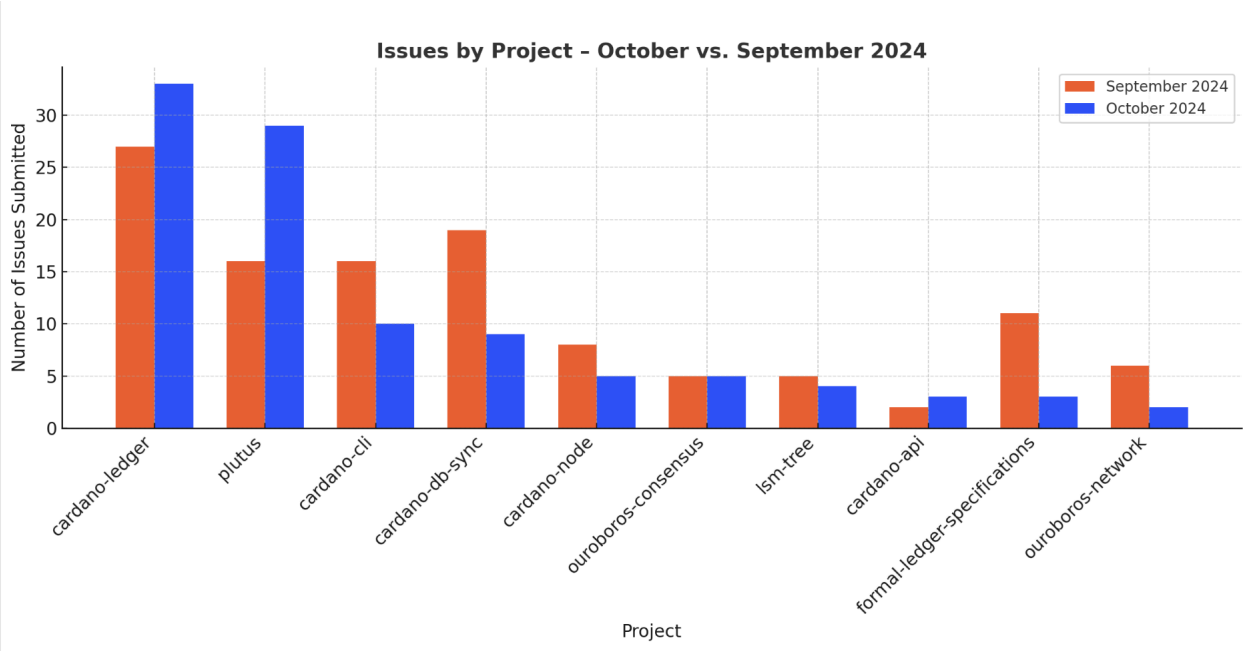
3. **Well-Typed** and **ATADA SPO** continued low-volume submissions with minor declines or stability.

4. **Tweag** reappeared with a small batch of issues, contributing again after a gap.

3.b) Projects

Top Projects – October 2024

Project	Issues (Oct)	Issues (Sept)	Change (%)	Median Open (Oct)	Median Open (Sept)
cardano-ledger	33	27	+22.2%	61.0 days	73.9 days
plutus	29	16	+81.2%	92.6 days	75.4 days
cardano-cli	10	16	−37.5%	82.4 days	98.6 days
cardano-db-sync	9	19	−52.6%	55.4 days	47.3 days
cardano-node	5	8	−37.5%	69.5 days	88.6 days



Observations:

1. **cardano-ledger** remained the most reported-on repository, with a 22% increase in issues and an improved resolution time, indicating healthy attention and throughput.

2. **plutus** saw an 81% spike in issues submitted, but median open time worsened, signaling **higher demand with slower triage** — possibly reflecting growing complexity or delayed prioritization.

3. **cardano-cli**, **db-sync**, and **node** each received fewer issues than in September, yet all showed **reduced open times**, suggesting **greater responsiveness or issue backlog cleanup**.

---

4. Pull Requests

October 2024 – 437 pull requests submitted by 56 contributors across 21 repositories.

PR activity rose slightly in October, with a 4.3% increase in total submissions and one additional repository receiving PRs. However, the number of unique submitters fell by **12.5%**, suggesting that **a smaller group of developers handled a larger share of contributions**.

Metric	September 2024	October 2024	Change
Total PRs	419	437	+4.3%
Unique Submitters	64	56	−12.5%
Repositories Touched	20	21	+5.0%

Observations:

1. **Steady growth in PR volume** indicates sustained delivery momentum, even as the contributor base narrows slightly.
2. The **rise in repositories touched** reinforces a theme of **broader ecosystem engagement**, spreading activity across more projects.
3. The **drop in submitters** could reflect internal team concentration, focused delivery phases, or fewer external contributions during the period.

---

5. Analysis of Contributions by Organization

Top Organizations – October 2024

Organization	Contributions (Oct)	Contributions (Sept)	Change (%)	Authors (Oct)	Authors (Sept)
Input Output (IOHK)	913	879	+3.9%	49	51
Tweag	111	28	+296.4%	1	2
Well-Typed	104	151	−31.1%	6	7
Cardano Foundation	44	8	+450.0%	1	1
Quviq	20	1	+1900.0%	2	1

Observations:

1. **IOHK** continues to lead Cardano ecosystem contributions with a modest increase in total output, maintaining stable team engagement.

2. **Tweag** posted a nearly **4x increase in contributions**, indicating targeted work from a very small team (1–2 contributors).

3. **Well-Typed's** activity declined, likely due to the completion of a milestone or a temporary shift in focus, despite retaining a sizable author group.

4. **Cardano Foundation** and **Quviq** showed significant percentage growth, though on smaller absolute volumes, signaling **renewed or expanded engagement**.

Glossary

Report Technical Definitions:

- **Repository(Repo):** In Git, a repository, often abbreviated as "repo," is a storage space where your project's files and their entire revision history are stored. It typically includes various files such as source code, documentation, images, and more. Repositories can be either local (on your computer) or remote (hosted on a server like GitHub, GitLab, Bitbucket, etc.).
- **Issue:** An issue is a feature request, bug report, task, or any other item that needs to be tracked within a project. In Git repositories hosted on platforms like GitHub or GitLab, issues are commonly used for discussing and tracking tasks or problems related to the

project. They can include labels, assignees, comments, and other metadata to facilitate collaboration and organization.

- **Pull Request (PR):** A pull request is a proposed change that a user wants to merge into a target branch of a repository. It's commonly used in distributed version control systems like Git to facilitate code review and collaboration. When a developer completes a feature or fixes a bug in a separate branch of the repository, they can initiate a pull request to merge their changes into the main branch or another designated branch. Pull requests often include a summary of the changes, discussions, reviews, and automated checks.
- **Contributor:** A contributor is anyone who participates in a project by making contributions such as code changes, documentation improvements, bug fixes, feature enhancements, etc. Contributors can be individuals or organizations, and their contributions can take various forms, from writing code to providing feedback, reporting issues, or reviewing pull requests.
- **Git:** Git is an open-source distributed version control system designed to handle everything from small to very large projects with speed and efficiency. It allows multiple developers to work on the same project simultaneously, coordinating their work through branching, merging, and version tracking. Git is widely used in software development for managing source code revisions and collaborating on projects.
- **GitHub:** GitHub is a web-based platform that provides hosting for Git repositories and offers collaboration features such as issue tracking, pull requests, code review, and project management tools. It's one of the most popular platforms for hosting Git repositories and facilitating collaboration among developers and teams. GitHub also provides additional features like wikis, continuous integration, and deployment services.
- **Commit:** In Git, a commit is a snapshot of the changes made to the files in a repository at a specific point in time. It represents a single revision or change set and includes a unique identifier (SHA-1 hash), a commit message describing the changes, and a pointer to the previous commit(s). Commits are fundamental to version control in Git, as they allow developers to track changes, revert to previous states, and collaborate on code changes.
- **Organization:** In Git and GitHub, an organization refers to a group or entity that can own repositories, manage access permissions, and collaborate on projects. Organizations are often used by companies, open-source projects, or groups of developers to centralize their repositories and manage their collective work. Organizations on GitHub can have multiple members with varying levels of access, allowing for collaborative development within a structured environment.
- **Project:** A project in the context of Git and GitHub typically refers to a specific software development endeavor or initiative. It encompasses all the related tasks, code, documentation, issues, and resources needed to achieve a particular goal. Projects are often organized within repositories on GitHub, where developers can collaborate, track progress, manage tasks, and share code. A project may involve multiple contributors working together to develop and maintain software, with each contributor contributing to different aspects of the project.
- **Community:** In the Git and GitHub ecosystem, a community refers to the collective group of developers, users, contributors, and other stakeholders who are involved in a particular project, organization, or open-source initiative. Communities are essential for fostering collaboration, sharing knowledge, providing support, and driving the growth and sustainability of projects. They often gather around shared interests, goals, or values, and may interact through various channels such as forums, mailing lists, chat platforms, and

social media. A strong and engaged community can contribute to the success and longevity of a project by providing feedback, contributing code, reporting issues, and supporting fellow members.