



Cardano
Foundation

Activity Report

2024

Who we are

The Cardano Foundation is an independent, Swiss-based not-for-profit organization that operates to **advance Cardano as a public digital infrastructure across** a wide range of industries, users, and use cases.

Bridging Cardano and the world

The Cardano Foundation works with institutions, businesses, regulators, and policymakers to solve problems in new ways. Scaling the **diversity, quality, and quantity of activities** on Cardano is core to the Cardano Foundation's mission.

This goal faces hurdles, from the cost and complexity of implementation and ownership, to lack of comfort with blockchain. The Foundation seeks to address such obstacles with targeted initiatives around operational resilience, education, and adoption.

Colleagues

100+

working with institutions, businesses, regulators, and policymakers to solve societal and enterprise challenges in new ways

Countries

65+

with Cardano block producers monitored

Partners

15+

institutional and enterprise partners globally, including United Nations Development Programme, Unbox, and Service Plan Group



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What we do

Our work centers on three mutually reinforcing focus areas:



Adoption

In driving the use of Cardano by enterprises and other organizations, the Cardano Foundation contributes to the longevity of the ecosystem. It achieves this through initiatives that drive adoption and showcase what can be achieved with a public permissionless blockchain, including through improved tooling, reducing adoption and running costs, fostering open source development, and highlighting the art of the possible with Cardano.

[Read more](#)



Education

By contributing to information on and legal certainty for third-generation blockchains, the Cardano Foundation promotes a broader understanding of the Cardano blockchain and its associated opportunities and applications. We participate in discussion and debate, support research, and explain blockchain concepts to diverse stakeholders.

[Read more](#)



Operational resilience

The Cardano Foundation bolsters the resilience, reliability, and durability of Cardano's infrastructure by enhancing its suitability for institutional use, ensuring advanced network monitoring, and providing tools. We also collaborate with the community to achieve effective, representative community governance.

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2024 highlights

2024 was a year of significant achievements. Highlights include:



Adoption

- Collaborated with industry leaders, including on a Decentralized Automated Ballistic Identification System (D-ABIS), a real estate platform.
- Introduced various technical enablers to enhance functionality.
- Released version 1.0 of the Aiken smart contract language.
- Soft launched accounting tool Reeve.
- Facilitated interoperability by introducing Inter-Blockchain Communication Protocol (IBC) to the Cardano blockchain.
- Released **MiCA-compliant sustainability indicators** for Cardano.
- Co-hosted and sponsored the inaugural Buidler Fest.
- Initiated public-private partnerships between UN organizations, other enterprises, and the Cardano ecosystem with Project Catalyst funding.

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Education

- Established the [Cardano Blockchain Certified Associate \(CBCA\) program](#).
- Expanded learning materials and partnerships, including with Petrobras, SEE Institute, and Women in Tech.
- Signed an agreement with Universidad Tecnológica Nacional, Argentina, to offer Aiken and Cardano training.
- Launched the Round Table Talk series with Cardano community experts.
- Hosted the Cardano Summit 2024 in Dubai, bringing together over 1,000 attendees from across 87 countries.

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Operational resilience

- Contributed to projects and initiatives supporting governance and decentralization.
- Collaborated to launch **PRAGMA**, and the subsequent launch of Amaru.
- Launched **Cardano.org** as an open-source project.
- Launched Verify Cardano Message, a webtool to independently verify a message signed with Cardano keys.
- Contributed to work toward the Ouroboros Genesis.
- Enhanced blockchain monitoring capabilities with a public transaction (congestion) monitoring service.
- Supported implementation of the Chang hard fork ahead of decentralized governance.
- Rolled out a new Java-based Rosetta implementation to optimize operations of centralized exchanges trading ada.
- Maintained and improved various builder tools that have wide adoption.

[Read more](#)

A message from our CEO

Cardano is building the blocks of a foundation that could change the world.

Word about the power of Cardano is spreading. This year, the Cardano Foundation was honored to sit with ministers, heads of states, education institutes, CEOs, developers, and even NASA. In each of these meetings, we showed how Cardano can improve and contribute to a fairer, more efficient, and more transparent world for everyone.



None of this could be achieved without the incredible Cardano community: the developers, the innovators, the enthusiasts, and the independent thinkers who take their ownership in this ecosystem seriously. In the close to five years that I've had the privilege of being CEO of the Cardano Foundation, countless talented, intelligent and passionate people have grown this blockchain beyond expectation, consistently making the seemingly impossible possible. Now, Cardano stands at the start of a new era; an era of decentralization and governance that will propel the utility of this blockchain into the future.

We must acknowledge that this comes not just with opportunity but with challenges too.

Growth often presents real discomfort. We have seen it in the discourse, debates, and – yes, sometimes – politics that have surrounded Cardano in the past year, both from within and outside the community. It is in those moments that we need perseverance, patience, and an acknowledgment that all of us believe strongly in the power of Cardano. With time, patience, and a commitment to finding common ground, all of us in this ecosystem will do great things.

A look back at 2024

The Cardano Foundation made strides in 2024, including the launch of the Rust node, working towards fully decentralized governance (with the development of multiple constitutions by the community), and the growth of the Cardano ecosystem with leading institutions and banks. We continue to drive forward our key focus areas of adoption, education, and operational resilience.

Adoption

In 2024, we built on previous successes. In addition to existing partnerships with such established organizations as the United Nations Development Programme, the Georgian wine industry, Unbox, and more, we added divergent new partnerships and use cases throughout the past year, including a unique ballistic identification system, an innovative way to verify real estate transactions, and a use case for NASA. These projects are impressive, but they serve a greater purpose than that; they showcase what blockchain can truly do, further proving the technology's utility beyond cryptocurrency.

We were pleased to soft launch Reeve, an enterprise-grade accounting function that enables organizations to enhance transparency and build trust through secure and verifiable financial data using blockchain. The Cardano Foundation also delivered several new technical projects and improvements that optimize usability and

A message from our CEO continued

accessibility, improve the developer experience, and ultimately increase adoption of Cardano beyond those developers fluent in Haskell.

That includes the hugely popular Aiken smart contracting language, the implementation of a protocol that bridges Cardano to a broader interchain ecosystem of over 115 interconnected blockchains, and several Java and programming updates that make Cardano easier to utilize than ever. Coupled with our ever-increasing commitment to open-source development, including the launch of the PRAGMA association, the Cardano Foundation is working to make Cardano accessible to all.

Education

At the core of our activities is a consistent commitment to education, whether that be through new education programs and partnerships or with the launch of our new website and branding. We work to demystify blockchain and to engage stakeholders from across society – from the public and individual developers to regulators and enterprises. Increasing the average stakeholders' knowledge of the blockchain will serve to futureproof the technology in a way few other initiatives can. Our engagement with regulators also, including submitting to consultation calls and speaking to representatives, shows our seriousness in working with those who can herald the application of blockchain for the public good.

Finally, our packed and intensive events schedule, which numbered hundreds of hours in 2024, allows us to engage with people from across the world, from our thriving and passionate community to heads of industry and all in between.

Operational resilience

I remain hugely proud of the continuous operation of the Cardano network, which is one of the rare ecosystems to have never had downtime in its history. That resilience is not accidental: It is the result of the hard work, monitoring, and deep knowledge of the network that comes from our community, Cardano developers, and the teams across Cardano, including our dedicated teams in the Cardano Foundation. The work to ensure operational resilience continued in 2024, both to identify and eliminate any potential weakness and to safeguard against any future challenges. In addition to enhancing the resilience of the network through a public transaction (congestion) monitoring service and the implementation of a bug bounty program, we continued to contribute to work ahead of the arrival of Ouroboros Genesis and supported the implementation of the Chang hard fork ahead of decentralized governance. We will continue to build upon this operational resilience as Cardano continues to grow, highlighting Cardano as the reliable and exceptional tool that we know it to be.

A look to the future

In 2025, Cardano will change. How that change goes depends on the community and those reading these words. Too often, the focus is on markets – whether they're bull or bear and how much the value of a cryptocurrency rises. That short-term thinking hugely undercuts the immense potential and value of the blockchain, and especially the Cardano ecosystem, which is the blockchain of the future. Cardano stands proud as one of the best-equipped blockchain ecosystems in the world.

Yet, innovation has to follow. I was struck recently by a conversation that I had with a number of government ministers and business leaders. In a short meeting, they described challenges for which they were desperately searching for blockchain solutions. As they spoke, it dawned on me that the solutions they were seeking were ones I had seen delivered by the Cardano Foundation and the Cardano community two to three years ago. Business leaders, governments, and organizations are hungry for the answers our blockchain can provide to them. My challenge to you is to seek them out and to show them what Cardano is really capable of.

While we can be proud of the incredible toolkit that we at the Cardano Foundation have built and provided, now is the time for developers, integration engineers and solution architects who live by implementing to show what can

really be done. Entrepreneurs, coding experts, integration engineers, project managers, and blockchain enthusiasts need to rise to the challenge and explore the opportunities for building real-world solutions and products that the market is crying out for.

With the continuing evolution toward decentralization and self-governance, the future of Cardano is not a foregone conclusion – and therein lies the beauty of this wonderful ecosystem that I'm proud to be a part of heralding toward its next chapter. That's why, for 2025, the Cardano Foundation will be moving to three new central focuses: technology, governance and adoption. The keys to the long-term success of Cardano are in every ada-holder's hands. Now let's all pick up that challenge and prove to the world what Cardano can do.

With gratitude, respect, and faith in our collective future:

Frederik Gregaard

CEO, Cardano Foundation

Governance

Moving toward decentralized governance.

Moving toward a decentralized mode of governance, one that provides equal participation to every ada holder, formed a key part of the Cardano Foundation's activities in 2024. This participatory governance approach remains key to Cardano's future and long-term vision. The Cardano Foundation contributed to advancing it in a multitude of ways, including joining and participating in Intersect, including as chairs of working groups and voting members in committees, acting as an **interim constitutional committee (ICC) member**, and outlining and implementing processes and rationales as an ICC member for assessing the constitutionality of governance actions, including the completion of five governance action assessments on chain.

The Cardano Foundation continued to also define, engage, and iterate on the future of Cardano's governance independent of joint activities, including creating our own ethos and principles that outline how the Foundation will approach governance with **Our Cardano**, as well as developing a Cardano Foundation proposal for a **Cardano Constitution** for the delegates to use as additional input during the constitutional convention. Additionally, the community team held 22 Cardano governance office hours sessions and events whereby the Cardano community could learn about the Foundation's approaches

and initiatives and ask questions of us, reaching over 4,000 participants in 2024, as well as organizing and participating in global governance events, including Berlin, Lisbon, Vienna, Buenos Aires, Milan, Amsterdam, Dubai, Geneva, and Taiwan, and engaging on all platforms throughout the year with the Cardano community, including social media and the Cardano forum.

Finally, we funded community-led workshops to develop a Delegated Representative (DRep) code of conduct and also registered as a DRep to play an active role in ensuring the long-term sustainability of the Cardano ecosystem (DRep ID: drep1ydpfkyjxzeqvalf6fgvj7lznrk8kcmfnvy9hy16gr6ez6wgsjaelx).

The Cardano Foundation will continue this journey and work into 2025 and encourages the feedback and participation of all in the Cardano community in these discussions.





In 2024, the Cardano Foundation continued to boost adoption by showcasing how Cardano makes the impossible possible.”

Adoption



Adoption

Advancing diversification of blockchain adoption.

Driving adoption remains key to the advancement of blockchain as a public and private utility. In 2024, the Cardano Foundation continued to innovate and implement the technology through the creation of novel use cases. A renewed focus on open source solutions continues to foster collaboration.



Creating innovative use cases

Compelling use cases pave the way for the broader adoption of blockchain technology. Adding to the stable of diverse Cardano applications, including existing healthcare, telecom, and track-and-trace solutions, the Cardano Foundation sought out diverse partnerships.

This included the **Decentralized Automated Ballistic Identification System (D-ABIS)**, which was unveiled at the World Police Summit 2024 in March. Automated Ballistic Identification Systems (ABIS) are specialized systems designed to capture, store and rapidly compare digital images of bullets and cartridge casings to help identify firearms and link them to crime scenes. The D-ABIS Proof-of-Concept, developed in collaboration with Scientific Analytical Tools (SAT), showcases the practical benefits of blockchain technology in forensic science and public safety.

Additionally, in partnership with **YurekAI and Tokenance** the Cardano Foundation introduced a blockchain solution that provides a digital twin for real estate. This data is recorded on a public registry and encrypted and captures in a safe and immutable fashion all the details of a real estate transaction. Partnership with YurekAI and Tokenance to develop a digital twin solution for real estate, serving over 40,000 real estate agencies across the US and Europe, supported by 500 developers.

Building on the relationship formed with Switzerland for UNHCR in 2023, the Cardano Foundation also collaborated on several humanitarian projects, including with the **United Nations Development Programme (UNDP)**. The Cardano Foundation will explore ways to leverage blockchain-based digital identity solutions to tackle challenges faced by the UNDP-implemented program with civil society organizations (CSOs) across Africa, the Middle East, and Asia. This programme will be implemented by UNDP for the Islamic Development Bank and Islamic Solidarity Fund for Development.

Adoption continued

Innovating Public-Private Partnerships through Cardano's Treasury

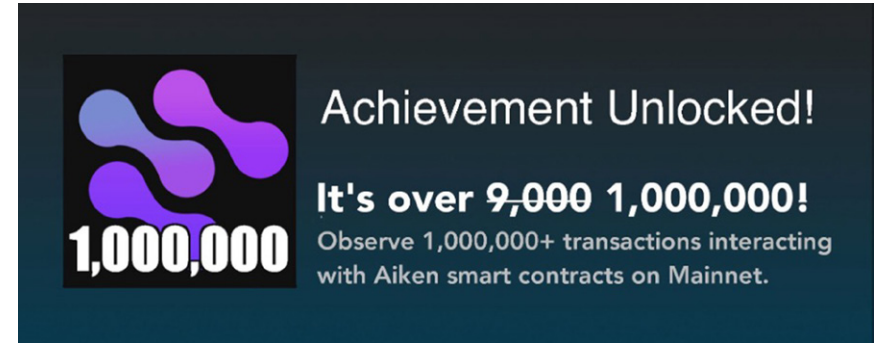
In 2024, Cardano's innovation grant engine – Project Catalyst – introduced a funding track for enterprises looking to integrate Cardano. Project Catalyst has allocated close to 150 million ada in grant funding to the Cardano ecosystem in 2024 alone. It receives its funding from the Cardano Treasury, a source of public on-chain funding for the benefit of the Cardano ecosystem. The Cardano Treasury – currently worth 1.6 billion ada and growing – will be fully accessible once Cardano's governance features are enabled in early 2025.

The Cardano Foundation has worked alongside community members, as well as contributors such as **Storm Partners** to educate private sector actors about the funding opportunities through the Cardano Treasury. Some notable proposals being funded by the Cardano community in 2024 include Barcelona FC, Amnesty International, Swisscom, Syngenta Foundation, Check Point Software, Techstars, UNDP x EMURGO, Draper University, and CV Labs.

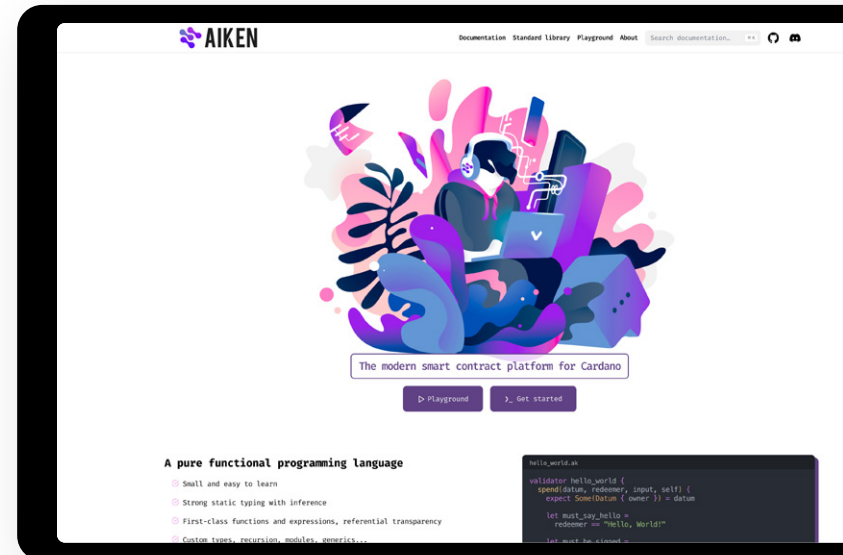
Developing technical enablers to encourage on-chain activity

Following an initial launch in April 2023, the 1.1.0 release of Cardano smart contract programming language **Aiken** in September 2024 marked the end of the Alpha period, promoting it to general availability. Currently the top smart contract language used on-chain it comprised 62% of total smart contract activity in November 2024 with **over one million transactions on the mainnet**, showcasing speed and scalability.

Minswap, a leading decentralized exchange, chose Aiken for its V2 upgrade, demonstrating Aiken's pivotal role in developing sophisticated DApps on the Cardano blockchain. The Foundation will continue to support open source projects like Aiken.



Achievement Unlocked!
It's over 9,000 1,000,000!
Observe 1,000,000+ transactions interacting with Aiken smart contracts on Mainnet.



The modern smart contract platform for Cardano

▶ Playground ▶ Get started

A pure functional programming language

- Small and easy to learn
- Strong static typing with inference
- First-class functions and expressions, referential transparency
- Custom types, recursion, modules, generics...

```
hello_world.ak
validator hello_world {
  spend(input, redeemer, input, self) {
    expect Some(input (owner)) = datum
    let mut say_hello =
      redeemer == "hello_world"
    let mut be_closed =
```

Adoption continued



Driving adoption remains **key to the advancement of blockchain** as a public and private utility.”

Facilitating interoperability

As businesses explore blockchain technology, challenges related to scalability, data privacy, and interoperability can arise. To enhance Cardano’s connectivity, the Cardano Foundation worked to introduce **Inter-Blockchain Communication Protocol (IBC)** capabilities to the Cardano blockchain.

Implementing the IBC protocol allows projects in the Cardano ecosystem to bridge to Cosmos SDK chains and the broader interchain ecosystem of **over 115 interconnected blockchains**, unlocking the potential for scalable, secure, and flexible solutions. Events such as Buidler Fest, the Cardano Summit, and Cosmoverse showcased the IBC implementation.

Digital identification and wallets

Strong digital identification and wallet solutions will prove essential for the secure and sustained adoption of blockchain technology. Since the launch of its Identity Wallet in 2023, the Cardano Foundation has worked on the creation of a number of technical enablers to support these solutions.

That work has included supporting Project Catalyst funding grants for projects such as **Landano, UNDP, Guild1, and RootsID** to integrate with Cardano Foundation Identity Solutions, and the continued developments of **KERI on Cardano and credential tooling for Web 2.0, Web 3.0, and enterprise applications** to integrate with the Identity Wallet. In regards to Keri, we completed the first mainnet transactions demonstrating KERI on Cardano and the ability to leverage Cardano as a public, permissionless Verifiable Data Registry for GDPR compliant decentralized identity.

We continue to iterate on this, including by developing a novel SSI mechanism, leveraging established blockchain specifications (BIP-39), to allow Identity Wallet recovery, and adding features to the Cardano Wallet to support an **encrypted metadata standard** and the new governance system. Additionally, we have implemented a **Deposit Wallet MVP**, a centralized exchange focused version of the wallet with improved features to support fund deposits and tracking of multiple accounts. This is a novel approach to format verifying the business logic based on Agda and Agda2hs.

Finally, we were proud to complete a successful pilot demonstrating **Cardano Foundation Identity Solutions capability for cross-chain verifiable data between Corda and Cardano**.



Education



Building trust and confidence among blockchain regulators and enterprises.

For businesses, institutions and developers to use and contribute to the blockchain ecosystem, trust and confidence need to be fostered through familiarity with the possibilities and potential limitations of the technology. Legal clarity is also crucial to protect users and investors.

In addition to the Cardano Foundation's ongoing work with regulatory bodies and responding to consultations, initiatives in 2024 expanded the Cardano Academy and encompassed a range of events, workshops, and collaborations to facilitate open discussion, advance research, and simplify blockchain ideas for diverse audiences.

Engaging with regulators

The Cardano Foundation's work with policymakers includes participation in events and roundtables, as well as advocating for principles-based regulation that accommodates the unique characteristics of blockchain.

During the year, consultation responses included for the **Bank for International Settlements' (BIS)** review of its previously established stance towards the risks of public, permissionless blockchains in banking. The Cardano Foundation also contributed thoughts on the BIS' consultative document proposing Principles for the sound management of third-party risk in the banking sector.



We have been working to demystify blockchain and to engage stakeholders from across society.”

Participation in events with policymakers included the **Point Zero Forum**, an annual gathering of hundreds of representatives of international regulators and finance industry leaders **and an SNB (Swiss National Bank) seminar**. At Point Zero, the Cardano Foundation hosted a workshop on blockchain's potential to promote transparency and accountability and to verify environmental, social, and governance (ESG) initiatives. Additionally, the Foundation participated in roundtables conducted by the UK's Financial Conduct Authority (FCA) on the future regulatory regime for cryptoassets.

To address the requirements of the **European Union's Markets in Crypto-Assets (MiCA)** regulation, in July the Cardano Foundation and Crypto Carbon Ratings Institute (CCRI) released MiCA-compliant sustainability indicators for the Cardano network. Being among the first blockchain organizations to do this reflects the importance of this topic to the Cardano Foundation. In November, the Cardano Foundation released a whitepaper template for MiCA compliant token issuance on Cardano, in cooperation with Lawside and Stadler Völkel.

Education continued

Developing the Cardano Academy

Following its launch in 2023, in 2024 the Cardano Academy broadened its offering and introduced certification and badges to recognize achievements. Developments and expansions of the Cardano Academy offerings included the following:

- In partnership with Pearson VUE, the Cardano Foundation established the **Cardano Academy** program to validate skills and knowledge and enhance professional credibility.
- Development of an **Aiken course** featuring innovative code visualizations.

[Learn more](#)

Spotlight on educational partnerships.

Collaborations with academic institutions, enterprises and other organizations are crucial to widening the Cardano Foundation's reach.

Some educational institutes we were pleased to partner with in 2024 were the **University of Zürich** where, as part of an ongoing relationship, colleagues contributed to the Deep Dive into Blockchain 2024 program at the UZH Summer School with lectures and workshops; **Universidad Tecnológica Nacional (UTN)** of Buenos Aires to expand blockchain education and adoption, which included additional initiatives through ADA Labs for Blockchain Applications (ALBA) and Ada Solar; the **SEE Institute**, a prominent hub for sustainability education and innovation based in The Sustainable City in Dubai, which announced its strategic partnership with the Cardano Foundation in December, including the launch of a six-module Professional Diploma in Sustainable Blockchain and **Dubai Blockchain Center (DBCC)**, with whom in September, the Cardano Academy led a Blockchain Technology Fundamentals for Enterprise Enablement workshop.

Enterprise partnerships in 2024 included **Women in Tech**, the largest global group for women in the technological sphere, for which we introduced free blockchain courses for the Women in Tech advocacy and membership group, as well as **Petrobras**, Brazil's state-owned energy company. The partnership with Petrobras expands a partnership launched in 2023. In 2024, our efforts led to the CBCA certification program being translated into Portuguese and implemented with localized exams and masterclasses for the organization. With the assistance of the team at TapDano, Petrobras and the Cardano Foundation also developed an on-chain "proof of attendance" solution.

Finally, we partnered with state and governmental institutions, including the **Argentinian State of Entre Ríos**, with whom the Cardano Foundation signed a public collaboration agreement with the Governor of Entre Ríos in June to explore and support the understanding of blockchain applications; and a collaboration with the **Organización de Estados Iberoamericanos (Organization of Ibero-American States/OEI)** to develop the OEI Cardano project. This project aims to introduce 20,000 Latin American students to blockchain technology and Web3 opportunities through the Cardano Academy.





Operational resilience



Advancing reliability of the Cardano blockchain.

Enhancing network stability and security is core to meeting business and regulatory standards, and nurturing user confidence, trust, and on-chain participation.

To strengthen the infrastructure of the Cardano ecosystem, the Cardano Foundation has contributed to mechanisms including redundancy, monitoring, and disaster recovery. In addition, work has continued to drive the decentralization that is core to the resilience of a public, permissionless blockchain based on proof of stake.

Representative governance is a fundamental element of a self-sustainable ecosystem, through which those operating and maintaining the network and other stakeholders play a part in decision-making. As such, the Cardano Foundation was pleased to contribute to a range of governance related efforts, including developing a Cardano Foundation proposal for a Cardano Constitution.

The Chang hard fork and a new era of governance

2024 marked a pivotal moment in Cardano's development with the Chang hard fork, which will fulfill Cardano's promise of becoming a self-governing, decentralized ecosystem as defined in CIP-1694. As part of this journey the Foundation joined Intersect, a member-based organization supporting Cardano's distributed governance.

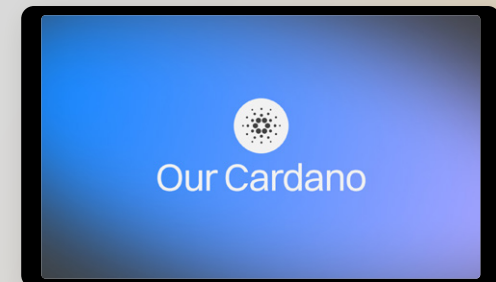
As an additional tool to provide reassurance to blockchain users during this governance transition, the Cardano Foundation introduced the Cardano Message Verification tool, based on CIP-8, to allow anyone to independently verify any signed messages, without the need for an on-chain action. The tool's use is not restricted to Chang-related governance features and its function provides users with easy access to the strong verifiability features of Cardano.

Developed to facilitate decentralized governance, **ZhuLi** is an on-chain validator and companion command-line tool that uses smart contracts to provide hot/cold account management to delegate representatives (DReps) on Cardano. Moreover, the publicly available source code demonstrates how to perform mode testing with Aiken's property-based testing capabilities.

Future-proofing the Cardano blockchain for developers and other stakeholders remains a priority for the Foundation. To ensure that exchanges and companies using them can continue operating smoothly, the Cardano Foundation team created version updates to prepare **GraphQL and Rosetta TypeScript** for the Chang hard fork.

Finally, ahead of the hard fork, the Cardano Foundation also released a document charting the ethos and principles that inform and shape our participation in the new Cardano governance model and our role in the Cardano ecosystem.

[Read Our Cardano](#)



Operational resilience continued

Promoting open source solutions

The Cardano Foundation champions open source initiatives to enable a sustainable and resilient ecosystem that meets user needs by harnessing the collective expertise of a global network of developers.

To support this objective, the Cardano Foundation – alongside Blink Labs, dcSpark, Sundae Labs, and TxPipe – launched **PRAGMA**, a member-based, not-for-profit open source association for blockchain software projects. The initial primary goal was to cultivate an open source ecosystem for Cardano by hosting existing projects and helping them to thrive. PRAGMA also aims to facilitate the development of meaningful new tools, with a long-term objective to become a home to any blockchain-related open source projects.

One such project is **Amaru**, which aims to build a Cardano full node in **Rust** to run alongside the existing Haskell nodes in a fully interoperable manner, increasing the decentralization of Cardano. A necessary building block in the development of Amaru was a re-implementation of the Untyped Plutus Core (UPLC) machine in Rust. Amaru's first demo went live in October showing initial architecture integration on pre-validated data, and a second demo was broadcast on the 20th of December showcasing the Hybrid ledger state of Amaru and thereby solving a notoriously hard problem of the Cardano node.



Some notable technical enablers produced, contributed to, and improved in 2024 include:

- 1 The Merkle-Patricia Forestry**, an authenticated data structure to map between arbitrary keys and values. Developed through Aiken, this represents a fundamental building block for developers, enabling numerous smart contract use cases including maintaining on-chain registries or providing large oracled datasets of intrinsic or extrinsic data (for example, GitHub data pertaining to an ecosystem of projects).
- 2 The Elm-Cardano project**, developed with the aim of being the most productive and intuitive way of handling an off-chain Cardano frontend, and a perfect match to Aiken for on-chain code. Elm has the advantage of no runtime exceptions and is statically typed, with a type system very similar to Aiken and Haskell, and friendly compiler error messages. Elm compiles to JavaScript, and has a few ways to interact with, or be embedded in a regular HTML/JavaScript app, making it a robust frontend solution.
- 3 Fortuna v2**, a Proof of Work protocol for verifying mining transactions on the Cardano blockchain. The protocol explores the minimum moving parts required to verify Proof of Work in an extremely limited environment like the PlutusVM. As a consequence, it provides a reliable source of entropy on-chain for a variety of smart contracts and applications requiring random numbers.
- 4 The Ogmios API**, as the most mentioned middleware service in the state of developer 2024 survey, was revamped based on more than three years of user feedback, which was channeled into a major release that reworked interfaces for an improved user experience, allowing hundreds of projects in the ecosystem to interact with the Cardano node. Ogmios has been kept up-to-date with hard forks with many governance features added along the way. Over the past year, it's been updated in a timeframe that is averaging to 11.3 days following each cardano-node release.
- 5 The Kupo chain-indexer**, which was also enhanced with the introduction of features including a read-only mode to facilitate horizontal scaling for large deployments, and automatic database indexing when synchronization completes.
- 6 The Hydra scaling solution** was enhanced with the addition of Unbox's open source Infinity protocol.
- 7 Ledger Sync v2**, a more lightweight version of the Java-based data provisioning tool, reduced sync time from three weeks to just one for the mainnet, and even less time without aggregations.
- 8 Cardano Rosetta**, which is an implementation of the widely adopted standard for blockchain interaction originally designed by Coinbase and used by many centralized exchanges for their asset operations, received a major overhaul with the new Java-based solution that removed the dependency to db-sync resulting in a significant reduction of the resource footprint for parties trading ada while at the same time significantly improving query times improving user experience a lot.
- 9 GraphQL**, the API based query layer on top of db-sync, which was updated to support more recent versions of cardano-node and allow for querying of the new on-chain data related to CIP-1694 governance features.
- 10 Cardano Java developer tools**, which received major updates to support all new governance features, Plutus Contract Blueprints based on CIP-57 and improved transaction building facilities.
- 11 yaci-devkit**, a tool that allows developers to easily bring up their own local development environment without the hassle of configuring a node and managing accounts using 3rd party tools.
- 12** The Cardano Foundation continued to work with the Cardano community to support and expand the **Cardano Developer Portal** in 2024, an open-source platform that provides educational resources, development tools, and support and guidance for developers within and outside the Cardano ecosystem. Currently, 227 developers contribute to the Developer Portal and 110 projects are showcased on the platform.



Enhancing utility and security

An ongoing focus is strengthening **network security** to foster trust and encourage adoption. Initiatives during the year included a diversity of projects, updates, and releases.

One key project to ensure the speed of the network was the launch of the **mempool (congestion) monitoring project** in November 2024 to assess how rapidly an end-user's transactions are included in a block. By submitting more than 3,700 "canary" transactions from the beginning of this effort, we confirmed the speed and efficacy of the network. This constitutes a natural evolution of last year's block propagation monitoring efforts via blockperf, which collects metrics from all nodes reporting to the Cardano Foundation's monitoring project. We also participated in the **Mithril Network**, alongside the CAG stake pool, thereby contributing to the adoption and viability of the Mithril stake-based threshold multi-signatures protocol. The stake snapshots that are signed and sent to a Mithril aggregator help with fast bootstrapping of a Cardano node on mainnet using Mithril snapshots.

Further contributions to work ahead of the roll-out of **Ouroboros Genesis**, a major update to Cardano's consensus protocol, is key for security. The goal of Genesis is to secure network bootstrapping and enhance security in dynamic

environments, particularly during their initial connection or when returning after a prolonged absence. Work included testing and participating in the 'Genesis Lite' interim peer-to-peer bootstrap relay network by running one third of the nodes, along with IOG and Emurgo. Additionally, the Cardano Foundation contributed to improving the peer sharing feature in the Ouroboros network. Peer sharing allows Cardano nodes to discover new peers dynamically, without nodes having to be registered on chain or without the need to use a central tool like TopologyUpdater to contribute to the network.

Finalizing the **Java Rosetta development** and the roll-out to the first exchanges was a notable achievement. This implementation of Rosetta for Cardano-based **Yaci Store** offers reduced resource footprints and enhanced performance, removing the db-sync dependency. In a further example of using this well-established programming language to support diversification of the ecosystem, the release of the Java Cardano token registry not only reduced operational costs relative to the earlier version of the token registry, built on GraphQL, but made the implementation available as an open source repository. Java re-implementation of the reward calculation removed the need to rely on the Cardano Haskell node and trust that it aligns with the specification.

To safeguard the security of the network, we contributed to a number of vital projects, including the development of a **disaster recovery CIP**, for use in the unlikely event of a major failure where the network is unable to recover itself. This CIP considers three scenarios: Long-lived network partition, failure to make blocks for an extended period, and bad blocks minted on chain. We also relaunched the **bug bounty program** on the ImmuneFi platform, offering financial rewards to ethical hackers who discover vulnerabilities in Cardano Foundation code.

Operational resilience continued

Stake pool operator delegation strategy

The Cardano Foundation is dedicated to supporting the growth and decentralization of the Cardano ecosystem through its delegation strategy. Based on our analysis, most of the pools that received Cardano Foundation stake delegation in 2023 were able to attract additional stake. This proves the success of the Delegation Strategy, as the stake delegation from the Cardano Foundation enabled pool operators to dedicate more time to further enhancing the Cardano ecosystem.

In November 2024, we redelegated to a new group of stake pools following a year of monitoring and assessing their contributions, such as work on developers.cardano.org, Cardano improvement proposals, Aiken, open-source contributions, and cardano.org. Pools must also meet technical requirements, such as maintaining at least two registered relays. Our data-driven approach ensures delegation supports pools actively advancing the ecosystem.



Cardano trademark

Strong trademarks safeguard the integrity of the Cardano ecosystem by fostering trust in projects associated with it, and preventing misuse of the Cardano brand that could negatively impact the ecosystem. The Cardano Foundation manages all core trademark activities to ensure the Cardano name and logo remain a strong and recognizable brand identity for the Cardano technology ecosystem and its global community.

The Foundation is committed to trademark stewardship through maintaining active trademark registrations in key jurisdictions, implementing a trademark policy that supports non-commercial, educational, and community uses while authorizing commercial uses that align with the Cardano mission, and actively monitoring and enforcing against unauthorized or illegitimate use to safeguard the trademarks' integrity and legal protection.

In 2024 we enhanced our monitoring efforts by leveraging professional trademark watch services and engaged with trademark authorities to demonstrate the trademarks were actively used by the community, ensuring the trademarks' continued legal validity. We also took decisive steps to address and resolve unauthorized or illegitimate uses (e.g. giveaway scams), including on social platforms such as Youtube, ensuring the community can continue to benefit from these trademarks.

Discovering use-cases through events.

Hosting and participating in conferences and events is vital for sharing information and ideas, stimulating collaboration, and inspiring the ongoing development of solutions that drive adoption of Cardano.

To complement the flagship Cardano Summit (see page 20), the inaugural **Buidler Fest** took place in Toulouse, France, in April. More than 100 people attended the 2-day event for tech-savvy Cardano builders to connect, showcase, and share. Feedback was enthusiastic, and the hope is that Cardano enthusiasts all over the world will feel empowered to organize their own versions of the event.

In addition to its own events, Cardano Foundation representatives participated in diverse conferences and gatherings to demonstrate and promote the organization's work and Cardano. During the year, the Cardano Foundation Identity Wallet and KERI on Cardano were showcased at events including **Rare Evo** in Las Vegas in August, **IIW (Internet Identity Workshop)** in California, a **GLEIF Workshop**, and **COP29** in Baku.

Colleagues also attended **QSig**, a workshop held in January 2024 at the **University of Edinburgh**, to explore the applications of quantum computing to cryptography, blockchain science, and financial technology.

100

Number of attendees for the inaugural Buidler Fest in Toulouse



 **CARDANO
SUMMIT2024**

Connecting, collaborating, inspiring



The Cardano Summit stands as a highlight, offering a valuable forum for celebration, inspiration, and collaboration.

The global Cardano Summit returned to Dubai for two days in October, bringing together industry leaders, businesses, Cardano ecosystem projects, and blockchain enthusiasts to connect, learn, and inspire. The mainstage gathering in Dubai was complemented by more than 20 community events in 25 countries.

There was an action-packed program of inspiring keynotes, lively panel discussions, and interactive workshops and masterclasses spanning adoption, education, governance, and operational resilience. The event culminated with the **Cardano Summit Awards 2024** to celebrate excellence in multiple categories. **Winners included NMKR for Best Infrastructure Platform, Minswap for Best DEX and DAO Tooling, and Empowa for Best Blockchain for Good. Landano's land registration dApp beat other early-stage Cardano startups to win the Battle of the Builders competition.**

The Summit also showcased Goodwall's partnership with the Cardano Foundation to launch the **Art Beyond Borders Global Impact Challenge**, supporting young artists and displaced people through blockchain technology.

Whether attendees joined in Dubai, at one of the many community events, or online, the Cardano Summit 2024 offered a unique opportunity to explore the latest advancements in blockchain, build valuable connections, and contribute to shaping the future of this transformative technology.

[Visit Summit website](#)



2 days

in Dubai

45+

sponsors

20+

community events

87

countries represented

60+

media partners

25

countries

180+

speakers and

15,000+

Live Stream attendees

2,000+

attendees

1,000+

participants

Community events

Financial reporting

Financial reporting

The Cardano Foundation is committed to transparency and to upholding the principles of openness, integrity, and community engagement. To complement the Activity Report, the Foundation also released its first Financial Insights Report in November 2024, which details how funds have been directed and the tangible impact made across the three core focus areas: operational resilience, education, and adoption.

[Read the report](#)

Subsequent to the release of the report, the Cardano Foundation also introduced Reeve, which is designed to enhance global accounting systems and financial reporting. It enables organizations to securely record and share critical financial data on the Cardano blockchain, ensuring its integrity and verifiability for all stakeholders. This functionality allows enterprises to establish open processes and ensure verifiable accountability as a standard practice.

In addition to providing the audited financials, the Cardano Foundation published a sample of underlying accounting transactions on-chain through Reeve, a major step forward for fuller financial transparency on the blockchain.

[Read more on Reeve](#)





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