



TWEAG's

Proposals for multiple core  
budget projects for Cardano  
2026-2027

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This document presents a collective proposal for projects led by Tweag by Modus Create, aimed at advancing the state of the art within the Cardano ecosystem.

It is meant as a starting point for discussing Cardano treasury withdrawals .

As such, we invite anyone interested to comment on the following document, and share feedback with us.

## Executive Summary

### Vision

Tweag works on the L1 infrastructure for the Cardano ecosystem and prioritizes improving safety and stability of the ecosystem. We embrace full ownership and complete feature delivery. In 2025, most of the work was related to projects that intended to improve the ecosystem; the 2026 proposals focus primarily on ensuring that all the efforts reach mainnet, are used by the community, and are in synergy with other strategic initiatives across the Cardano Ecosystem. The primary growth drivers for Cardano's next phase are the successful deployment and adoption of Peras (finality) and Leios (throughput).

Together, these upgrades enable a fundamental shift in network capacity and usability:

- Higher throughput (Leios) network gets more transactions per second.
- Faster finality (Peras) improves user experience and application design.

With their combined effect we expect increased transaction volume. This leads directly to:

- Increased revenue coming from transaction fees.
- Higher staking rewards.
- Improved network utility and competitiveness.
- Growth in TVL and ecosystem activity.

This proposal focuses on ensuring that this outcome is actually realized in production.

It does so by:

- Delivering Peras to mainnet and advancing its capabilities.
- De-risking protocol behavior under real-world and adversarial conditions.
- Providing tooling and infrastructure required for production adoption.
- Ensuring operational reliability and scalability of the network.

While much of our 2025 effort focused on projects aimed at future improvements, our main

strategic direction for the 2026 proposals is threefold:

1. **Key 2026 Deliverables:** The primary focus for our 2026 proposals is the successful launch of **Peras** to the mainnet, alongside preparing other ongoing projects for the integration of both **Peras** and **Leios**.
2. **Mainnet Delivery and Community Adoption:** Ensuring all our development work reaches the mainnet, is adopted by the community, and is in synergy with other strategic initiatives across the Cardano Ecosystem.
3. **Synergy and Ecosystem Alignment:** We are committed to an approach that avoids silos. All our development efforts are continuously vetted against the ongoing work of Input Output Global (IOG) and other ecosystem contributors to ensure maximum synergy. This includes proactive participation in community governance, technical workshops, and standards discussions to guarantee that Tweag's deliverables are not just technically sound but also strategically aligned with the overall roadmap for Cardano.

For the “Tweag’s core projects 2025-2026” proposal projects that require effort and maintenance we try to provide it during new feature development.

This proposal bundle is intentionally non-modular: 5 packages form a single delivery pipeline. Hoarding-node deployments and conformance testing provide the instrumentation and correctness scaffolding required to validate Peras, history expiry. Several work packages also require explicit governance and stakeholder actions (Hard Fork/CIP progression), so our success criteria separate (a) vendor-controlled completion from (b) ecosystem adoption and activation.

Where success depends on governance (Hard Fork activation or CIP progression), we commit to “ready-for-activation” deliverables (merged code, reproducible releases, runbooks, benchmarks, and governance-action packages) and separately report on “ecosystem activation/adoption” as a dependent milestone with clear owners and risks.

## Team & Budget Administration

### About Tweag and Modus Create

At Tweag by Modus Create, we offer a unique combination of deep technical expertise and strategic consulting capabilities, with a long-standing commitment to open-source and decentralized systems. EURL Tweag has been in business for over a decade, having started in 2013, and has built a reputation for engineering excellence across critical infrastructure projects.

Since January 2018, we have been continuously engaged with IOG (Input Output Global) on a variety of initiatives within the Cardano ecosystem, including core protocol development. Since

May 2021, we have extended this engagement to provide formal audits, helping to ensure the reliability and security of mission-critical code.

Our team has played a leading role in the development of Cardano's core infrastructure, including leading the consensus and ledger teams, implementing the Ouroboros Genesis protocol, and contributing to the design of Ouroboros Peras. We have been involved in nearly all aspects of the core Cardano node, giving us a comprehensive understanding of the system's architecture, roadmap, and strategic direction.

Beyond Cardano, we bring deep, practical experience with Haskell, Rust, and a wide range of technologies used in polyglot projects, enabling us to engineer scalable, secure, and high-performance systems across domains.

In 2022 after becoming a part of the Modus Create, a global digital transformation consulting firm, we are backed by a diverse team of strategists, designers, and technologists who help the world's leading brands build digital advantage. Modus Create specializes in strategic consulting, full lifecycle product development, platform modernization, and digital operations and is an official partner of top-tier technology providers such as Atlassian, AWS, and GitHub. This global reach and cross-disciplinary strength provide our clients with unmatched capabilities throughout the full product development lifecycle. In recent years, Modus Create has been heavily involved in AI-transformation, while still preserving the best practices and quality that Tweag is known for.

This proposal reflects our ongoing commitment to advancing Cardano's mission through rigorous engineering, strategic alignment, and high-impact delivery.

## Costing and Payments

### Administration and Contracting

Tweag by Modus Create requests that Intersect serve as the designated proposal and contract administrator following the roles and responsibilities outlined in the Cardano Constitution. This includes acting as the auditor of record, responsible for assessing progress and verifying that deliverables align with the commitments defined in this proposal.

Tweag anticipates entering into direct contractual agreements with Intersect, with a preference for Milestone Based Fixed Price contract structures where deliverables are clearly defined and scope is limited. Contract types, payment terms, and rate structures with subcontractors will be defined on a case-by-case basis.

Tweag retains full discretion over internal staffing and subcontractor selection, and reserves the right to onboard new or alternative suppliers as needed to ensure successful delivery. While specific security auditors are not identified in this proposal, subcontractors will be responsible for selecting, engaging, and funding security audits required to meet delivery standards.

All technical deliverables will undergo a rigorous, multi-stage review process to ensure protocol integrity and security. This includes mandatory code review by Input Output Global (IOG), as primary maintainers of the target Cardano repositories, to preserve architectural consistency. Independent validation will be provided by No Witness Labs, engaged as a third-party assessor across the relevant work packages. This dual-layer oversight ensures that high-impact protocol upgrades meet the ecosystem's standards for safety and reliability.

## Multi-Supplier Collaboration

Initiatives involving multiple suppliers will be delivered through close coordination between participating teams, with active engagement and guidance from the Technical Steering Committee (TSC). The TSC will support solution scoping, provide strategic oversight, and help ensure alignment with broader ecosystem priorities throughout the lifecycle of each workstream.

The inclusion of suppliers in this proposal reflects potential collaboration opportunities; however, it does not guarantee that any specific supplier will be engaged for delivery. Contracted suppliers will retain full autonomy over their internal resource allocation, work prioritization, and day-to-day project management responsibilities.

The Software Readiness Levels (SRLs) and release cadence for these initiatives will depend on the outcomes of funding decisions. Tweag anticipates working closely with Cardano development teams to align on release planning, technical milestones, and delivery expectations as proposals are executed.

## Project management and contributions

We are dedicated to maintaining transparency and encouraging community contributions as an open-source project. Our commitment includes:

- **Regular Demos** : We aim for a regular demonstration cadence, at least once every two months. All recordings will be stored on the website related to the project <https://tweag.github.io/cardano-website/>.
- **Status Updates**: Individual project status updates are consistently posted on our website: <https://tweag.github.io/cardano-website/>.
- **Communication Channel** : A dedicated communication channel for all projects is maintained on the Tweag Discord server. With updates published there on a regular basis.
- **Core Teams Communication** : For projects requiring interaction with core teams, we ensure prompt communication, including advance design discussions, alignment on

implementation, detailed explanations, demos, and defining the concrete form of integration on a case-by-case basis. We use a dedicated internal communication channel for projects to support frequent collaboration—both synchronous and asynchronous—enabling quick feedback loops, coordinated decision-making, and smooth teamwork. We also maintain a program-level Slack channel for knowledge sharing and cross-team coordination, ensuring that questions, updates, and expertise flow efficiently across the projects.

## Duration & Milestones

The expected duration of all work packages is set for **12 months** to strategically align the total project timeline with the realities of Cardano's mainnet deployment and complex technical scope, specifically to *mitigate* the risk of a full-year delay due to release procedures.

## Total Budget Ask

The total ask is **₺18,263,496** (covering a USD budget of **\$4,565,874**) for 2026-2027 years. The full budget breakdown is given below.

All scopes are estimated in *FTE* (Full-Time Equivalent) based on an average hourly market rate. Having now spent a year working with contractors and service providers in our ecosystem, we have arrived at an average hourly rate of around \$176, which gives us a figure of **\$4.6M** spread over the twelve months.

We (still) use a conservative conversion rate of **0.25 ADA [₺]** per **USD [\$]**. This rate is based on an average price calculation over the past 5 years, resulting in a price range of \$0.19 to \$0.25.

We provide a single portfolio budget table listing each work package total and a reconciliation checksum confirming that the sum equals **₺18,263,496.00**. Any “fixed price /prior-cycle” line item is labelled with what it buys in 2026–2027 and why it is included in this ask.

Project	Budget ask (₺)
Peras v1 ready to the mainnet	₺ 10,586,720
History Expiry	₺ 2,816,016
Conformance Testing of Consensus Peras and Leios	₺ 4,860,760
<b>Total</b>	<b>₺ 18,263,496</b>

# Alignment with the Strategy Framework

## Strategic pillar

**Pillar 1: Infrastructure and Research Excellence**

**Pillar 5: Ecosystem Sustainability and Resilience**

Our main goal with this proposal is to supercharge the fundamental **L1 protocol infrastructure** and make it more reliable for everyone. We've chosen to focus heavily on **Infrastructure and Research Excellence** because building a rock-solid foundation is the most critical step for Cardano's future growth and widespread adoption. Our approach delivers a comprehensive set of mutually-reinforcing software tools, centered around improving the **Peras delivery mechanism**. This concerted effort not only strengthens the core but also directly contributes to **Pillar 5: Ecosystem Sustainability and Resilience**, ensuring the network can handle future challenges and maintain its long-term health.

## Work packages description

### Peras v1 ready for the mainnet and support

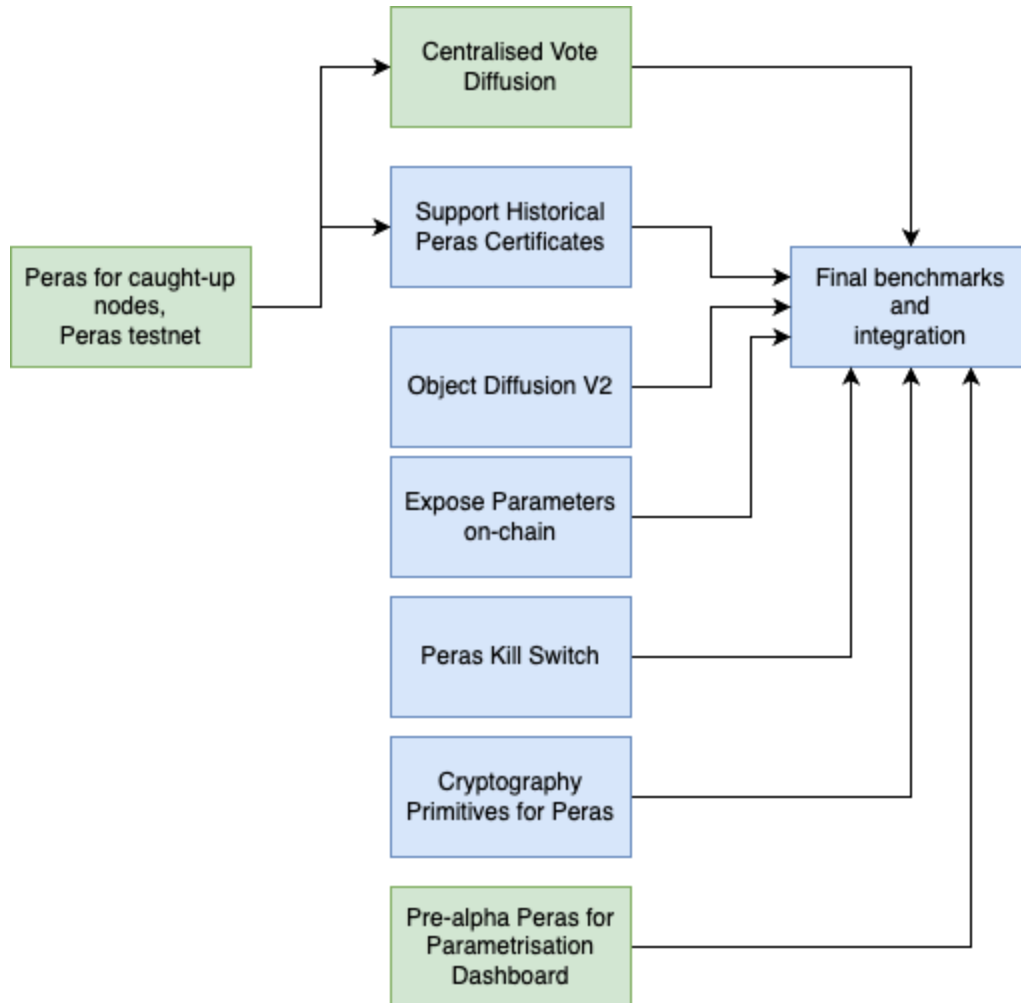
**Area:** Adoption / L1 protocol improvements

**Core KPI:** Transaction per day, TVL

#### High level description

Peras is a core protocol upgrade that significantly improves transaction finality on Cardano, reducing settlement time from approximately 12 minutes to a target of 2–5 minutes under normal conditions. This improvement is essential for enabling responsive applications, efficient L2 solutions, and increased transaction throughput utilization. As part of the broader scaling roadmap alongside Leios, Peras is a primary driver of increased transaction volume and economic activity on the network. This work package focuses on delivering all remaining functionality required to bring Peras v1 to mainnet readiness, ensuring it is secure, operable, and usable by node operators and developers.

In 2025, we proposed to work on the following three tasks (colored in green) for Peras. Their relation and dependencies to each other and the remaining work is depicted below. In this proposal we are going to work on the tasks that are left for preparing Peras v1 for the preprod environment (colored blue).



The purpose of this work package is to provide all missing functionality for pre-alpha-Peras to be deployed on mainnet. This version is called Peras-v1. The required parts of the implementation are

- Support of the historical certificates — this is a part of the protocol that affects the bootstrapping phase and protects from the several kinds of attacks that may lead to a fresh node choosing the wrong chain before it has caught up with the rest of the network.
- Cryptography primitives — pre alpha Peras does not focus on using real cryptographic schemes. As a part of the delivery to the mainnet, we will implement and apply real cryptography schemes as well as run required benchmarks to ensure sustainability of the solution.
- Kill Switch implementation — as a part of disaster-recovery procedures, we plan to introduce a way to coordinate disabling and re-enabling of Peras on demand. It includes changes in configuration, API, and documentation for SPOs.

The project does not finish after Peras is ready for the mainnet. It would be required to provide necessary training work on supporting tooling. Provide further maintenance by working on the tasks that are required for the reliable work on Peras but that were left of the mainnet branch as

not strictly required. Such features do not require extra research, and expected to land on the mainnet per normal release schedule.

## Core objectives

- Implement production-grade cryptographic primitives and integrate them into the Peras protocol.
- Support historical certificates required for secure node bootstrapping and chain selection.
- Introduce a KillSwitch mechanism enabling coordinated activation and deactivation for operational safety.
- Expose all tunable Peras parameters on-chain for transparency and governance control
- Extend the cardano-cli to support certificate operations, including generation, inspection, and validation.
- Deliver developer and SPO documentation with example workflows for certificate management.
- Enable local simulation of Peras behavior and certificate flows for testing and validation.
- Provide maintenance and support for the duration of the contract.

## Expected Value

Faster and more predictable settlement is important for L2 solutions and partner chains, which rely on timely and reliable L1 confirmation for their operation. While such systems can operate under current conditions, improved finality may significantly enhance their efficiency and usability.

Peras improves settlement under non-degraded conditions, achieving approximately 2 minutes finality with overwhelming probability under standard assumptions, compared to approximately 12 minutes with Praos (in good conditions). This enables more responsive interactions across DApps, L2 solutions, and partner chains (e.g. Midnight), allows applications to increase interaction frequency, directly increasing transaction volume per user (**Monthly transactions**) and improved user engagement (**MAU**), as applications can offer more responsive interactions. Faster and more predictable settlement may also strengthen confidence in DeFi and L2 systems, potentially contributing to **TVL** growth.

Peras does not increase throughput capacity directly, but may improve utilization of existing capacity. Its additional resource overhead is modest, providing a favorable tradeoff between performance and cost.

## Metrics for Success

- Peras is deployed and activated on Cardano mainnet via a completed hard fork, success of these metrics depends on the governance action and is outside of the vendor control.
- Median settlement time is  $\leq 5$  minutes under non-degraded network conditions and  $\leq 25\%$  adversarial stake conditions, compared to baseline 12 minutes.

- Storage usage increases by no more than 30% compared to Praos under non-degraded network conditions and  $\leq 25\%$  adversarial stake.
- No emergency disablement (KillSwitch activation) occurs during the first 6 epochs (~30 days) after mainnet activation.

“**Settlement time**” is time from transaction submission to reaching the proposal’s defined settlement criterion (must specify: k blocks / ledger confirmations / finality rule).

“**Non-degraded network conditions**” = a published network profile (e.g., connectivity threshold, latency distribution, packet loss envelope) used consistently across benchmarks.

“**Observation period**” = a specified continuous window with start/end dates (or epoch range) and a published measurement pipeline.

## Classification

**New initiative or continuation of existing:** Continuation

**Primary nature:** Technical

## Project continuation

Peras code will still be maintained, but it should be done as parts of the following projects.

## How this work package will be delivered

### Milestones

Milestone	Deliverables	Acceptance criteria	Weeks
T1.1 Project Kickoff	Public repository and tracking board (issues, milestones).  High-level architecture overview of Peras v1 components.  Recorded public kickoff demo.	Repository and tracker are publicly accessible.  Project plan overview document is published.  A recorded demo is available online on the project website.	1
T1.2 Finalized Requirements and Implementation Plan	Complete requirements specification including but not limited to: <ul style="list-style-type: none"> <li>- KillSwitch design.</li> <li>- On-chain parameters.</li> <li>- Historical certificates.</li> <li>- Cryptographic requirements.</li> </ul>	The requirements document is complete and publicly accessible.  Each component is traceable to requirements.  The implementation plan is published and reviewed.	4

	<ul style="list-style-type: none"> <li>- Performance requirements.</li> </ul> <p>Public implementation plan mapped to components.</p>	Cryptography requirements handed off to the research team.	
T1.3 Peras v1 Functional Implementation (Pre-Mainnet)	<p>Implemented:</p> <ul style="list-style-type: none"> <li>- KillSwitch mechanism.</li> <li>- On-chain parameter storage.</li> <li>- Certificate handling tools.</li> <li>- Network integration updates.</li> </ul> <p>Integrated into the node codebase (with placeholder cryptography).</p> <p><i>For the cryptographic scheme BLS scheme is used, but it may be changed based on the result of the research.</i></p>	<p>All components are accepted for merge into relevant repositories.</p> <p>End-to-end functionality demonstrated in the test environment.</p>	16
T1.4 Production Cryptography Integration	<p>Integration of finalized cryptographic primitives.</p> <p>Support for historical certificates using production crypto, in case it is required by the research.</p> <p><i>This work depends on outcomes of the research team.</i></p>	<p>Cryptographic implementation replaces placeholder solutions.</p> <p>All related components are integrated and functional.</p> <p>End-to-end functionality demonstrated in the test environment.</p>	8
T1.5 Mainnet Release Preparation and Hard Fork Readiness	<p>Code merged into release branch.</p> <p>Deployment on pre-production network.</p> <p>SPO documentation and operational guides.</p> <p>Governance actions prepared.</p>	<p>Peras is included in the hard fork candidate codebase.</p> <p>Successfully deployed and tested on preprod.</p> <p>Documentation is publicly available.</p> <p>No critical blocking issues remain.</p>	8
Post release maintenance	<p>Implementation of the features that were dropped in order to meet the delivery timelines</p>	<p>Updates to peras are reviewed by the thirdparty.</p>	10

## Estimated budget

Cost category	Item	Item Quantity	Unit cost	Item total cost
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	Description			
Development (Labour)	FTE	80	₺ 117,334	₺ 9,386,720
Research and development work on security by CBU	Work package and support	1	₺ 1,200,000	₺ 1,200,000

## History expiry

**Areas:** Reliability

**Core KPI:** Alt. Full Node Clients, Scaling the L1 engine

### High-level description

As transaction throughput increases with the introduction of Leios and improved finality via Peras, the storage requirements for Cardano nodes are expected to grow significantly. Without intervention, this growth risks making node operation economically unsustainable, reducing participation and weakening decentralization. *History Expiry* introduces support for partial-history nodes, allowing nodes to operate without storing the full historical blockchain while preserving security guarantees through the full header chain. This work is essential to ensure that increased throughput does not translate into prohibitive infrastructure costs.

The ultimate goal is to enable a flexible, cost-effective spectrum of node types — from lightweight nodes with limited history to full archival nodes — without compromising the network's security or decentralization principles. This evolution is essential for ensuring the long-term economic viability and scalability of the Cardano staking infrastructure. High transaction volume (100–1,000+ TPS) from the Peras and Leios integrations will cause Stake Pool Operator (SPO) disk usage to surge, potentially by ~1 GB/hour. Requiring SPOs to store the **entire** historical blockchain is becoming too expensive and economically unsustainable.

**Proposal:** Implement an optimized data storage solution, similar to Ethereum's, to allow for "partial history" nodes. This decouples daily node operation from the high cost of full archival storage, a concept already proven on the mainnet (e.g., Amaru). The idea is to keep the full **Header chain**, while the **block chain** will be truncated to a certain depth. The core idea of the project is to ensure that the Cardano network will continue being effective and operational with partial nodes available on the network.

This solution introduces flexible, cost-effective nodes, ensuring the long-term economic viability and scalability of Cardano's staking infrastructure. This guarantees network health without compromising security or decentralization, as all nodes will still securely maintain the full transaction *Header Chain* history.

## Core objectives

- Define and submit a Cardano Improvement Proposal (CIP) enabling nodes to operate without storing full historical blockchain data while preserving security guarantees.
- Specify network-level configuration parameters for safe operation of partial-history nodes (e.g., minimum history window, protocol behavior).
- Deliver a production-ready implementation of a Cardano node supporting partial history storage.
- Provide operational documentation and tooling for operators to safely migrate, validate, and monitor partial-history nodes with provided tooling.

## Expected Value

The proposed solution reduces storage requirements for node operators by enabling partial-history nodes, lowering the cost of participation for SPOs. As transaction throughput increases, continuous growth of historical data risks becoming a limiting factor; this proposal prevents storage from turning into a bottleneck and improves the economic sustainability of running nodes.

By decoupling node operation from full historical storage, the proposal enables long-term scalability of the L1 engine, allowing higher throughput without imposing unsustainable infrastructure costs (**Throughput capacity per day**). Lower operational requirements may also improve network reliability and decentralization by enabling broader participation from node operators.

These improvements may indirectly support increased transaction activity (**Monthly transactions**), user engagement (**MAU**), and confidence in the ecosystem (**TVL**), by providing a scalable and economically sustainable infrastructure.

## Metric of Success

- Percentage of active nodes operating in partial-history mode on mainnet.
- Storage growth per node is reduced compared to full-history nodes under equivalent transaction load.
- Partial-history nodes remain fully compatible with consensus, with no increase in fork rate or validation errors compared to baseline.

## Classification

**New initiative or continuation of existing:** New initiative

**Primary nature:** Technical

## How this work package will be delivered

### Milestones

Milestone	Deliverables	Acceptance criteria	Weeks
T3.1 Project Kickoff	<p>Public repository and documentation hub.</p> <p>Problem statement and scope definition.</p> <p>Initial design outline for partial-history nodes.</p> <p>Recorded public kickoff/demo.</p>	<p>Repository and documentation are publicly accessible.</p> <p>Demo recording is publicly available on the project website.</p>	2
T3.2 Protocol Specification for Partial-History Nodes (CIP)	<p>Establish a clear consensus on the problem and constraints with the community.</p> <p>Specify what it means for a node not to have the full history:</p> <ul style="list-style-type: none"> <li>- Mini-protocols: changes to ChainSync to let nodes communicate to partial nodes</li> <li>- Define a minimum history window (e.g. 5 epochs).</li> <li>- Re-affirm the header chain requirement: nodes should have the full header chain to validate blocks.</li> </ul>	<p>CIP draft is published and submitted, reaching 'Proposed'.</p> <p>Specification fully and unambiguously defines node behavior.</p> <p>Feedback from consensus/network teams is incorporated.</p> <p>No critical open design questions remain.</p>	4
T3.3 Node Implementation with Bounded History Storage	<p>Implementation of:</p> <ul style="list-style-type: none"> <li>- sliding window storage model.</li> <li>- protocol changes from CIP.</li> <li>- updated validation and replay logic.</li> </ul> <p>Integration with existing node components.</p>	<p>Node runs using bounded history (no full chain required).</p> <p>Functional tests pass under normal operation.</p> <p>Crash/restart recovery strategy is implemented.</p> <p>Implementation reviewed and accepted by relevant teams.</p>	8
T3.4 Ecosystem integration	<p>Align on the integration with Mithril and GSA decide on and implement requirements.</p> <p>Prepare documentation resources for SPOs (configuration, storage requirements, tradeoffs).</p> <p>Deployment guide.</p>	<p>Documentation is complete, and accessible for reference.</p> <p>Documentation is published on Cardano community resources.</p> <p>A third party (external operator) can run a node using only the documentation.</p> <p>No missing critical steps.</p>	8

## Estimated budget

Cost category	Item Description	Item Quantity	Unit cost	Item total cost
Delivery (Labor)	FTE	24	₺ 117,334	₺ 2,816,016

## Supporting resources

**Full proposal:** [https://drive.google.com/file/d/1nEuvhOsAX7VPgFJajz86AeOE4hP\\_Bd8j/view](https://drive.google.com/file/d/1nEuvhOsAX7VPgFJajz86AeOE4hP_Bd8j/view)

## Conformance Testing of Consensus: Peras and Leios

**Area:** Operational resilience / Reliability

**Core KPI:** Monthly uptime, Alt. Full Node Clients

## High level description

This proposal extends the [Conformance Testing of Consensus](#) (CTC) framework to support emerging consensus features while ensuring its reliability and usability. The CTC framework represents an initial investment toward a shared, implementation-agnostic conformance testing infrastructure for the Cardano consensus protocol; while still maturing, it establishes the foundations for validating consensus behavior across independent node implementations. This proposal consolidates that foundation by extending scenario generators and improving the testing infrastructure to account for the features of Ouroboros Peras and Ouroboros Leios.

## Core Objectives

- Integrate the Conformance Testing of Consensus (CTC) framework into the Cardano ecosystem and core repositories. It includes providing required executables and developer documentation that can be used to perform all required testing.
- Extend the CTC framework to support Ouroboros Peras consensus features.
- Extend the CTC framework to support Ouroboros Leios consensus features.
- Define and implement executable conformance properties that validate protocol guarantees for both Peras and Leios.

## Expected Value

This project enables validation of emerging consensus mechanisms under realistic and adversarial conditions prior to deployment. By extending the CTC framework to support Peras and Leios, it reduces implementation risk and increases confidence in protocol correctness across node implementations.

This supports safer protocol upgrades and more reliable network operation (**monthly uptime**). By enabling independent clients to verify conformance, it also contributes to **operational resilience**

by reducing single-client risk.

Indirectly, by enabling safer adoption of Peras and Leios, the project supports scalability and ecosystem growth, **contributing to throughput capacity per day** and **TVL**.

### Metrics of Success

- Executable conformance tests for Peras and Leios are implemented and successfully executed against at least one node implementation.
- At least one alternative node implementation integrates CTC tests into its CI pipeline, producing a test results log/report.<sup>1</sup>

### Classification

**New initiative or continuation of existing:** Continuation

**Primary nature:** Technical

### How this work package will be delivered

### Milestones

Milestone	Deliverables	Acceptance criteria	Weeks
T5.1 CTC Integration into Cardano Ecosystem	<p>Integration of the Conformance Testing of Consensus (CTC) framework into Cardano repositories.</p> <p>Alignment with existing development workflows and tooling.</p> <p>Documentation describing how CTC is used within the ecosystem.</p>	<p>CTC framework is merged into relevant Cardano repositories.</p> <p>Tests can be executed within the standard development or CI workflow.</p> <p>Documentation is available describing usage and integration.</p>	4
T5.2 Executable Consensus Tests for Peras	<p>Extended CTC generators capable of modelling Ouroboros Peras features.</p>	<p>Code is reviewed and accepted for merge into the relevant repositories.</p> <p>Tests execute successfully and validate expected consensus properties.</p>	12

<sup>1</sup> As Tweag does not have control over alternative node code, both metrics will be reified as a public demo showing a test run against an alternative implementation.

	Executable properties validating Peras consensus behavior, ensuring correct handling of voting, certificates, chain selection, and protocol fallback conditions.	Public demo demonstrates test scenarios and results.	
T5.3 Executable Consensus Tests for Leios	<p>Extended CTC generators capable of modelling Ouroboros Leios features.</p> <p>Executable properties validating Leios consensus under its timing constraints, ensuring correct behavior under stochastic certification outcomes and protocol-specific dynamics.</p>	<p>Code is reviewed and accepted for merge into the relevant repositories.</p> <p>Tests execute successfully under defined scenarios.</p> <p>Public demo demonstrates test scenarios and results.</p>	24

### Estimated budget

Cost category	Item Description	Item Quantity	Unit cost	Item total cost
Implementation of the CTE framework	Fixed price	1	₺ 2,500,000	₺ 2,500,000
Development (Labour)	FTE	21	₺ 117,334	₺ 2,346,680
Reviews of the consensus team	Hours	20	₺ 704	₺ 14,080

### Supporting resources

**Full proposal:** [https://drive.google.com/file/d/1gz8XpH1vo1iXXW8rYOXx\\_MkvX27l4b7H/view](https://drive.google.com/file/d/1gz8XpH1vo1iXXW8rYOXx_MkvX27l4b7H/view)