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CERES BLOCKCHAIN SOLUTIONS

Requirement & Funding

Ceres Blockchain Solutions is embarking on the creation of Veles, an innovative Polkadot pallet tailored for the efficient tokenization and management of carbon credits. This is an idea/project that was supposed to be part of the **Substrate Builders Program** before it was discontinued. Parity engineers have reviewed the code of our other products. They were satisfied with our work and wanted to give us the green light to become part of the Substrate Builders Program. This initiative aims to introduce a transparent, secure, and user-friendly platform for carbon credit trading by leveraging Polkadot tech stack. To bring this project to fruition, encompassing development, testing, and deployment stages, we are seeking financial support amounting to 5,000 DOT.

Proposal submitted by bond responsible and beneficiary address: 15TBFmf446DMSptES19SC97yLbJXjePZRkoeysFyX7nbvZ7k
Contact: Filip Jovanović | CEO at Ceres Blockchain Solutions
Email: filip@ceresblockchain.solutions

Intro

Ceres Blockchain Solutions is a Belgrade-based software company specialized in the design, development, and implementation of Web3 software solutions. Their operations extend beyond creating in-house products; they play a significant role in empowering teams and individuals within the Web3 space. Through comprehensive consulting and outsourcing services, Ceres Blockchain Solutions aids in turning innovative ideas into sustainable software solutions.

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Ceres Blockchain Solutions stands out not only for its comprehensive blockchain development services but also for its active engagement in creating and deploying a diverse range of DApps and platforms. Their portfolio, spanning from decentralized exchanges (DEXs), launchpads, farming platforms, gaming DApps, to governance systems, showcases their versatility and commitment to advancing the blockchain ecosystem.

The products mentioned suggest a broad spectrum of applications, including:

- Ceres dApps

  Ceres is an in-house project which is intended as a DeFi service provider in the Polkadot ecosystem. The Ceres dApps platform includes services such as Liquidity Locker and Token Locker.
- Ceres Launchpad

  The Launchpad platform is the first station for new projects on the network. With Launchpad, new projects can easily launch their tokens on Polkaswap and users get more security because the Ceres Liquidity Locker and Ceres Token Locker are integrated.
- Demeter Farming Platform

  The Demeter Farming platform is the first of its kind. The unique feature of this platform is the user's ability to farm with the same liquidity in multiple pools. The Platform also provides Farming-as-a-Service, which means that every project can create its farming/staking pools without coding.
- DEO Arena

  The DEO Arena is a Play-to-Earn game. In-game currency is the token Demeter (DEO). Players spawn in the arena and the goal is to eliminate opponents using different weapons. Each player enters the match with a certain amount of DEO tokens, which are taken by the winner at the end.

- Hermes Governance System

  The Governance platform is a tool for implementing the concept of decentralization in the Hermes DAO. Any user holding Hermes (HMX) tokens above a set limit is able to create a poll. Likewise, each voter who has more than the set minimum amount of Hermes (HMX) tokens, has the same voting power as anyone else.
- Ceres Tools

  Ceres Tools is a platform which displays data from the Polkaswap DEX. Users are able to track tokens prices, liquidity pairs, pool details, as well as 24hr volume for each pair and for all available pairs. The platform is also available in the form of a mobile application for Android and iOS.

Notably, Ceres has been predominantly active on Polkadot parachains, where they have successfully delivered most of their projects. This experience underlines their proficiency in navigating these platforms' unique ecosystems, contributing to their reputation as a versatile and capable blockchain developer. Their work, known for supporting multi-chain interoperability and innovation, aligns with Ceres' objectives of fostering a more accessible, efficient, and interconnected blockchain landscape.

Context of proposal

In the pursuit of sustainable development, the importance of green energy, carbon credits, and the reduction of carbon dioxide emissions cannot be overstated. These elements are critical in combating climate change and fostering a

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sustainable future. Ceres Blockchain Solutions recognizes the pivotal role blockchain technology plays in achieving these goals by providing a transparent, efficient, and immutable platform for tracking and trading carbon credits and promoting green energy initiatives.

Carbon credits are a key mechanism in incentivizing the reduction of greenhouse gas emissions. By tokenizing carbon credits on the blockchain, we ensure a transparent and fraud-resistant system that can effectively support global carbon offset programs. This encourages investment in green energy projects, such as wind, solar, and hydroelectric power, further advancing our transition towards a low-carbon economy.

The ultimate goal of carbon credits and green energy projects is the significant reduction of carbon dioxide emissions. Blockchain technology enables the meticulous tracking of emissions and the impact of reduction efforts in real time, providing an undeniable record of environmental contributions. This not only aids in regulatory compliance but also promotes corporate responsibility and public trust.

Polkadot emerges as a superior technological and infrastructural solution for developing blockchain-based environmental sustainability products. Its interoperability allows for seamless communication between different networks (parachains), enabling a more connected and efficient ecosystem for carbon credit trading and green energy initiatives. Furthermore, Polkadot's scalability and security ensure that these systems can grow to meet global demands while protecting sensitive data and transactions.

Ceres Blockchain Solutions is committed to utilizing Polkadot's advanced technology to develop solutions that contribute to sustainable development

goals. By building on Polkadot, Ceres can leverage its multi-chain network to create scalable, customizable, and secure platforms for carbon trading, green energy certification, and emissions tracking. Our aim is to use blockchain technology not just as a tool for financial transactions but as a cornerstone in the fight against climate change, paving the way for a healthier planet and a sustainable future for all.

Vision for Veles

The goal of Ceres Blockchain Solutions with the Veles project is to pioneer the development of a specialized Polkadot pallet for carbon credits. Our ambition is to transform Veles into a foundational, Rust-based framework that not only facilitates but also elevates the management and trade of carbon credits within the Polkadot ecosystem.

Veles is designed to enable developers and businesses to integrate carbon credit functionalities effortlessly into their applications, effectively reducing the time to market for products aimed at enhancing the carbon credit market on Web3 platforms, such as marketplaces for trading carbon credits. This pallet will restore and advance the capabilities lost due to the complexities of blockchain technologies, offering a streamlined, plug-and-play solution that addresses the specific needs of the carbon market.

In aligning with our mission to support and enhance the carbon credit market on Polkadot, Ceres Blockchain Solutions is committed to providing extensive documentation and robust implementation support for the Veles pallet. Recognizing the diverse applications of carbon credits within the blockchain

ecosystem, our goal is to empower developers and organizations with the knowledge and tools necessary to adapt Veles to their specific needs.

Ceres will curate detailed guides and resources, covering everything from basic setup and integration to advanced customization options, ensuring that stakeholders can seamlessly incorporate the Veles pallet into their projects. Whether it's for developing carbon credit marketplaces, tracking emission reductions, or facilitating carbon offsetting transactions, our documentation will address a broad spectrum of use cases.

Moreover, our team will offer hands-on support to assist in the practical application of Veles, helping to troubleshoot challenges and optimize implementations. This approach not only fosters the growth of the carbon credit market on Polkadot but also encourages innovation by enabling users to explore new possibilities and applications of blockchain technology in environmental sustainability.

Through this comprehensive support infrastructure, Ceres aims to ensure that the Veles pallet becomes a cornerstone for the development of impactful, efficient, and transparent carbon credit solutions on the Polkadot network, contributing significantly to the fight against climate change.

This strategy underlines our commitment to simplifying the integration and utilization of carbon credit solutions in the Polkadot ecosystem, enhancing collaboration across the network, and providing builders with the tools they need to contribute meaningfully to the carbon credit market. Through Veles, Ceres is setting the stage for a more sustainable and efficient future, empowering projects that seek to mitigate climate change through innovative Web3 technologies.

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Carbon credits

Carbon credits, serving as a key mechanism for climate change mitigation, symbolize a quantifiable reduction in GHG emissions. They incentivize sustainable practices by attaching economic value to the emission reduction efforts. Projects across reforestation, renewable energy, and efficiency improvements are crucial, with their impact meticulously verified by third parties to ensure authenticity. The trading of these credits provides a flexible path for entities to meet sustainability targets, with retirement of credits ensuring real-world impact. This system, underpinned by standards like the VCS, emphasizes accountability and environmental integrity, offering a viable route towards global emission reduction goals. The following showcases the state of carbon market in physical worlds and potential use cases in Web3 by adding Technology layer which utilizes core principles of blockchain technology, leading to couple different projects paths:

Emission Reduction Projects: Those projects target greenhouse gas diminution through diverse strategies like reforestation and renewable energy initiatives. Their effectiveness is validated by independent audits to ensure real-world impact. Each project generating verified reductions is rewarded with carbon credits, adhering to standards like the VCS, facilitating a transparent market for trading these credits. Entities buy credits to neutralize their emissions footprint, aligning with regulatory or voluntary sustainability commitments. Upon usage, credits are retired to guarantee the authenticity of emission reductions, preventing double-counting and reinforcing the integrity of environmental contributions.

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Measurement and Verification: When these projects are implemented, they are rigorously measured and verified to determine how much carbon dioxide equivalent (CO2e) they have prevented from entering the atmosphere. This measurement is typically done by third-party organizations to ensure accuracy.

Issuing Carbon Credits: For every ton of CO2e emissions that a project successfully reduces or avoids, it is issued one carbon credit. These credits are typically standardized and can be traded on carbon markets. The most commonly used standard is the ***Verified Carbon Standard (VCS)***.

Trading and Compliance: Organizations or individuals that have emissions reduction targets can purchase these carbon credits to offset their own emissions. This is often done to meet regulatory requirements or voluntarily as part of corporate sustainability efforts. The carbon credit market allows buyers to essentially "offset" their emissions by supporting emissions reduction activities elsewhere.

Retirement: Once a carbon credit is purchased and used to offset emissions, it is retired, meaning it cannot be sold or used again. This ensures that the reduction in emissions is genuine and not double-counted.

The need for Web3 in the carbon credit market is underscored by the limitations of traditional carbon markets, such as opacity in transactions and reliance on weak regulation. Web3's decentralized nature offers transparent and tamper-proof tracking of carbon credits, facilitating secure and verified transactions. Ceres leverages this by creating a pallet that enables accurate documentation, lifecycle tracking of carbon credits, and a platform for transparent trading. This approach addresses the challenges of false credits and speculative pricing, offering a robust system.

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Other solutions VS Veles

While other blockchain related solutions do exists (in the forms of pallets, para/main chains, smart contracts and DAOs), they usually fall victim to two project-ending issues, these being the the issuing of CCs without any chain-based proof (thus leading to a number of false CCs) and allowing for the buying and sale of CCs based on speculative pricing (this in turn will put a project in a risky financial position as the price of its tokens could fluctuate heavily which would not reflect the actual price of the carbon credit).

Our solution aims to solve this by firstly having a project documentation requirement for each CC batch per each project - meaning that a project needs to submit adequate data that backs up their claim for the generated CCs. Secondly, our solution (pallet) will function more as a public ledger that tracks the entire process behind each CC and how it is used throughout its lifecycle than for speculative purposes. In addition, in the chance that a problem does occur with the validity of the origin of CC, our solution will have a means to mitigate the damage that was done.

The Veles pallet consists of the following elements:

- Carbon credit projects
- Project validators
- Users

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Carbon credit projects

A carbon credit project is a virtual abstraction of a physical project which has the capacities of generating CC. A CC project contains a pool for the carbon credits that it could generate (if it is approved by the project validators of the pallet).

Before a project can start with its credits validation process, the project owners have to stake a certain amount of native tokens (defined by the pallet deployer) whose purpose will be explained later on. In order for a project's credits to be validated and issued it needs to provide valid data of their origin to the project validators.

A project can have multiple participants in its ownership and thus each stakeholder in the project could submit their own data that could strengthen their claim that the credits the project is generating are valid.

It is worth noting that one project could have multiple batches of issued credits, as there could be a case when the project expands its capacities and generates more CC. Apart from the need for credit validation, the provided documentation serves as a sort of an indexing method to know which credit is connected to which batch/project, so in the case that a project is found to be invalid, their credits could be frozen until a probe has been conducted. Once a batch of CC has been validated and issued to a project, they could be sold to any pallet/chain user and in turn each project owner will get their fair share of the profits (determined during the project deployment phase).

Users

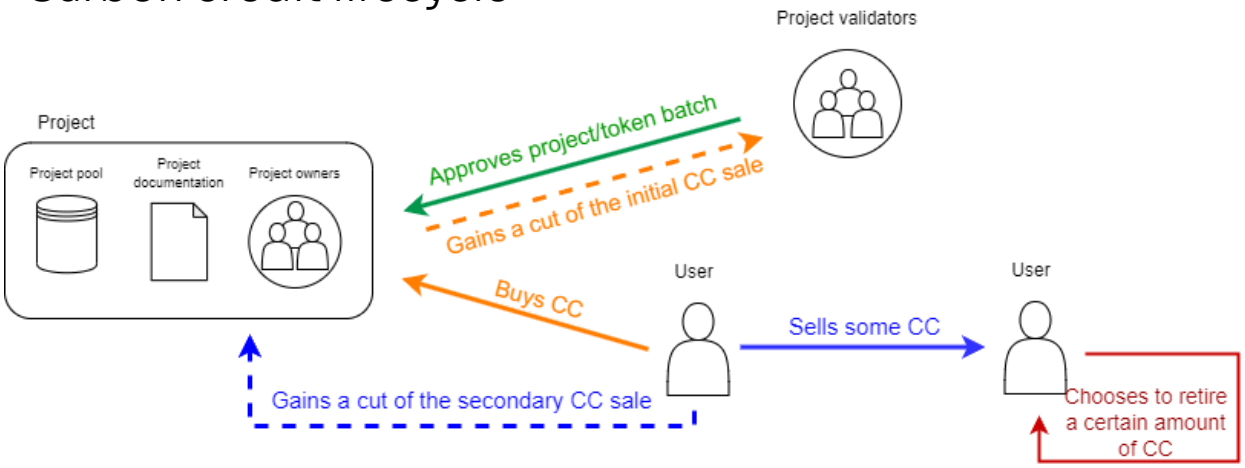
A user is an entity who has the need to acquire some CC in order to offset their carbon footprint and in turn would pay to do so. Thus, a user could be a company,

organization or individual that wants to contribute to the preservation of the environment. Users can buy verified CC off of existing projects and later on they could be retired (burned) in order to lower their carbon footprint. This action would lower their footprint for a period of 1 year. Apart from this, users can also sell their CC to other users but by doing so they would need to pay a small fee to the project from which the CC originated from.

Project validator

A project validator is an individual whose sole purpose is to validate new projects and/or new batches of CC. A validator will be chosen at random and until he hasn't voted a project/token batch can not proceed further. Validated projects/batches can be challenged on their eligibility by other validators once they are active. If a project/batch is deemed invalid all of its credits (both active and retired) will be frozen and the validator that initially gave the approving vote will be penalized. This is also valid if a validator gives a false challenge to a project that was valid in the beginning (the credits will be returned to their previous holders/users, as is the case with the burned amounts). In order for a person to become a validator they must stake a specific amount of native tokens which was defined by the pallet deployer. Validators will get a small cut of the profits from the projects which they validated (only from the initial transaction from the project to the users, not from user to user transfers).

Carbon credit lifecycle



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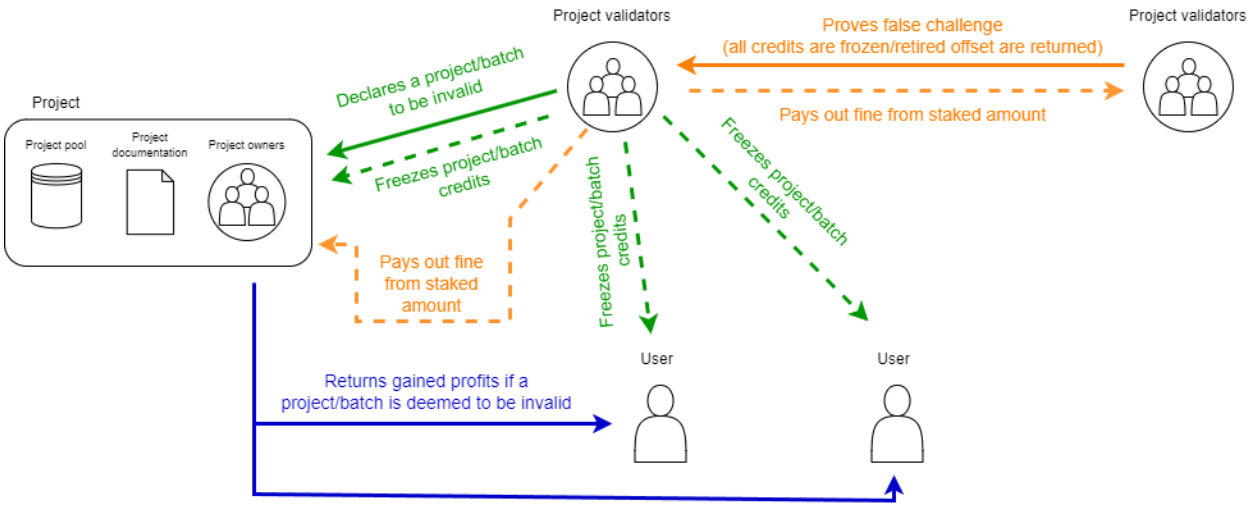
Once a project/batch credits have been approved by a validator then those credits can be sold to any one of the pallet/chain users. When an initial sale occurs (directly from the pallet to a user), a cut of the earning will be allocated to the validator that vouches for the validity of the credits that were sold.

Afterwards, once a user has bought some CC he/she can then decided on whether to sell them to other users, in this case a cut of the earnings from the secondary sale will be allocated to the project owners of the project from which the credits originated from, or they could be retired which will lead to their burning and an decrease of the carbon footprint for the user (will be tracked on the blockchain).

Carbon credit origin challenge



Once a carbon credit is declared to be valid by one validator, another validator/s can challenge its validity (project/batch). When this happens all of the projects (meaning all of the batches of credits that a project has produced) will be frozen

until a decision has been made by a specific number of validators (declared by the pallet deployer) on whether or not this challenge was justified.

In the case that a batch of credits has been proven to be invalid then the project owners have to pay back all of the users that bought the credits from that batch (with a specific penalty that is specified by the pallet deployer) and another challenge will occur on all other batches that the project has produced. This process will continue depending on the settings that the pallet deployer has chosen.

On the other hand, if an entire project has been challenged, then all of its credits will be frozen and a general probe into the project's validity will be made.

In the case that a challenge has been proven to be false, the credits which were frozen will be released and the validator that made the challenge will have to pay a hefty fine both to the project owners of a specific project/batch and to the validator/s that have proven the challenge to be false.

Notes on penalty freezings

In order to mitigate any malicious or invalid CC issuing, the Veles pallet will implement a penalty process that freezes any and all credits (both active and retired) in order to secure the overall ecosystem. A batch of tokens will remain frozen in accordance to the duration that was specified by the pallet deployer. If a situation occurs, in which a retired credit was retroactively frozen (i.e. after 5 years a CC batch is frozen and in that batch a number of credits were retired and they have been used to mitigate the carbon offset of at a specific past period), the carbon offset that was mitigated will be added to the newest time period for that

user (i.e. the users carbon offset will be increased).

Pallet deployment configuration

As per the previous sections, we can see that a deployer will need to configure a number of parameters before initially deploying the pallet. While we encourage the potential pallet deployers to do their own research in order to figure out what configuration suits their purposes best, we do provide a default configuration that will result in an optimal operational ecosystem for the purposes of CC issuing, monitoring, sale and retirement.

Time and Budget breakdown

The Veles project aims to be a common good, a plug & play solution that all Substrate chains can use in their own way. The entire budget will be allocated to development purposes.

The project is differentiated into 4 different phases and is estimated to last approximately 3 months. Two engineers will be working on this project following the roadmap given below:

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Phase	Task	Engineer Assigned	Description	Deliverables	Duration (weeks)
Phase 1: Initial definition	Requirement Analysis	Engineer 1	Analyze project requirements and create a detailed plan.	Project plan with requirements.	1
	Tools & Tech Selection	Engineer 2	Select appropriate tools and technologies for development.	List of tools and technologies to be used.	1
	Initial Design & Planning	Engineer 1	Develop initial product design and architectural plan.	Initial design documents and architecture.	1
Phase 2: Core Development	Setup & Configuration	Engineer 2	Configure development environment and set up workflows.	Configured development environment.	1
	Core Development Work	Engineer 1 & 2	Develop the core functionalities of the Veles pallet.	Working prototype of Veles pallet.	6
	Interim Testing & Revisions	Engineer 1	Perform interim testing and make necessary revisions.	Test reports and updated prototype.	1
Phase 3: Testing	Unit Testing	Engineer 2	Conduct thorough unit tests to ensure code quality.	Completed unit tests and results.	1
	Integration Testing	Engineer 1	Integrate different modules and test their interoperability.	Integration test reports.	1
	Bug Fixing	Engineer 2	Fix any bugs or issues found during testing phases.	Revised code with bugs fixed.	1
Phase 4: Deployment & Doc	Deployment to Testnet/Mainnet	Engineer 1	Deploy the pallet to the testnet/mainnet for live testing.	Deployed Veles pallet on the testnet/mainnet.	1
	User Documentation	Engineer 2	Create comprehensive documentation for end-users.	Complete user documentation.	1

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	Final Review & Adjustments	Engineer 1 & 2	Final review of the project and adjustments pre-launch.	Final version of the Veles pallet ready for launch.	1

Estimated BDD (Base Developer Day): 60