Nova Spektr: Polkadot Enterprise desktop app
Milestone 3 Report

Milestone 3 proposal: https://polkadot.polkassembly.io/treasury/413
Report & milestone 3 deliverables:

- Dynamic Derivations for Polkadot Vault
- WalletConnect v2 integration
- Cross-chain transfers
- Fiat values integration
- Proxy accounts and transactions
- Wallet details, forget and rename wallet
- Distribute the Nova Spektr to App Store and Microsoft Store
- In-app updates
- Staking improvements
- Ethereum address support
- Processed user's feedback

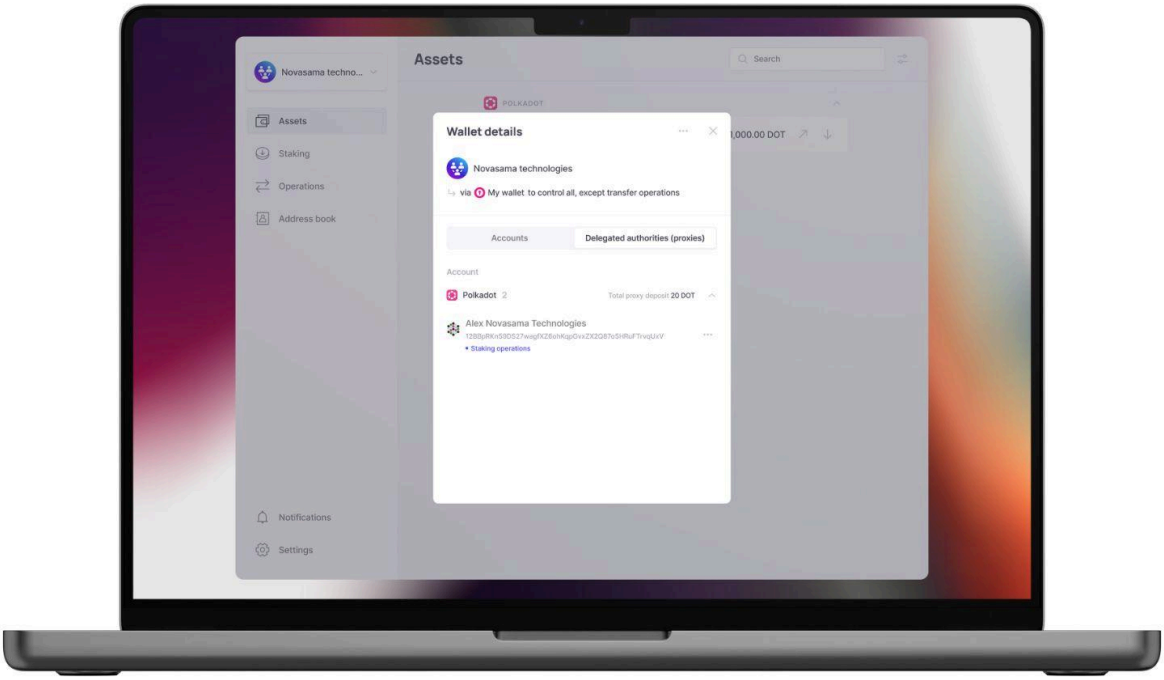

Figure 1. Delegated to you wallet (proxied account) details screen

1. Deliverables Overview

Proposal features

Table 1 illustrates the deliverables that were planned to be delivered in Milestone 3 and the delivered result.

Table 1. Milestone 3 proposal features set status

Theme	Feature	Description
Dynamic Derivations for Polkadot Vault	✅Add Keys screen	The Add Keys screen was designed based on feedback from power users. The Add Keys screen allows users to add standard keys: hot, pub, main with shared options and custom keys for the root key.
	✅Import Keys screen	Beside manual keys management the user is now able to import keys from a .yaml file that contains their derivation key structure.
	✅Add dynamic derivations into the existing Multishard Polkadot Vault wallet	On the Polkadot Vault wallet details screen the user is able to add more keys and remove existing keys.
	✅Add dynamic derivations into the wallet while pairing the wallet with the Polkadot Vault	Added a new wallet type - Polkadot Vault with a new way of pairing with Polkadot Vault. Add a button on the Polkadot Vault pairing screen that leads to the Add Keys screen. Added a button on the Polkadot Vault pairing screen that leads to the Import Keys screen. Send new keys' derivation paths to the Polkadot Vault for getting public keys based on the derivation path from the user's input and private key from the Polkadot Vault. The data exchange should be made with QR codes. Save new derivations and public keys.
	✅Make transactions from derivations created in the Nova Spektr	Designed and implemented a new QR code format for signing operations with Polkadot Vault from the name of a dynamically derived account. Multiple operation signing (bulk transactions) signing should be supported for dynamic derivations as well.
	✅Export my multishard wallet derivation paths	Export derivations of the Multishard Polkadot Vault wallet into the yaml file with the human-readable format. Exported yaml file may be used for importing keys when

		the user installs Nova Spektr on a new device.
	✅Update the multishard staking dashboard	Show sharded key in a single line with aggregated shards total stake and total rewards. When clicking on the sharded key, the list of shards should be shown. For each shard, the staking among and total rewards should be shown. The user can select all shards by clicking on the sharded key checkbox.
	✅Update wallet management tab	The wallet management tab was updated: 1. Wallet groups were changed based on the way of pairing: Polkadot Vault, Multisig, Watch Only, WalletConnect, Nova Wallet, Delegated to you 2. For wallet only the name is shown
	✅Receive tokens screen	On the receive tokens screen the user can select any key and shard in the shard if the multishard wallet is selected except the root key (vault).
	✅Send tokens screen	The tokens may be sent only from the key(s) that is(are) linked to the selected network. The user may not select the root key.
	✅Update the Polkadot Vault pairing result screen	After scanning the QR code from the Polkadot Vault the screen has to be changed: 1. There should be a Vault with Jidenticon instead of a root account 2. There should be a list of networks with derived keys 3. If the key is sharded then it should be shown as a single key 4. Icons for standard keys should be used (standard keys are hot, pub, and main)
Proxy accounts and transactions	✅Create proxy and pure account	Added a wallet context menu on the wallet tab with the Add delegated authority button. The user should be able to select a proxy account from the wallet, or address book or enter the proxy account address. The user selects the proxy type (Governance, Staking, NonTransfer, Any are supported). Nova Spektr checks that the max proxy limit won't be achieved when creating a proxy. Nova Spektr checks that there is no duplicated proxy. Nova Spektr shows the proxy deposit that will be reserved on the user's account. The proxy feature is available on Polkadot, Kusama,

		Moonbeam, Westend.
	✅Create pure proxy account	Added a wallet context menu on the wallet tab with the Add pure proxy button. The user selects the proxy type (Governance, Staking, NonTransfer, Any are supported). Nova Spektr shows the proxy deposit that will be reserved on the user's account. The proxy feature is available on Polkadot, Kusama, Moonbeam, Westend.
	✅Add proxy accounts and pure proxy into the Nova Spektr automatically	The Nova Spektr runs the worker that checks the proxy pallet storage in order to find and add into the Nova Spektr proxied accounts that may be managed by the user's accounts. It allows users to add/remove proxied accounts into the Nova Spektr automatically for further operating with them even if a proxy had been created outside the Nova Spektr.
	✅Create a pure proxy account for the Multisig wallet	The user is able to add a pure proxy for the Multisig wallet. From the UX perspective, the process is the same as for adding a pure proxy for a non-multisig wallet. Multisig signatories sign the create a pure proxy operation. For that purpose add/remove pure proxy operation screens were designed and implemented.
	✅Show proxy and pure proxy accounts in the wallet list	On the wallet tab the Delegated to you section was added. It contains proxied accounts wrapped into wallets.
	✅Make transfer, and staking operations from the name of proxy accounts	The user may create and sign transfer, and staking operations from the name of the proxy account with multisig and non-multisig accounts. Additional validation that checks if the proxy type is sufficient for making the specific kind of operation will be performed by the Nova Spektr. On the multisig operations list the Nova Spektr will be showing the proxy operation in the human-readable format like it's already implemented for non-proxy operations. **Limitation**: Creation and signing of nested proxy calls is not a part of the current milestone.
Fiat values integration	✅Select fiat currency in Settings	On the settings page the dropdown that allows the user to select the currency that will be used in the application for showing token equivalent was added. The list

		includes fiat currencies and ETH, BTC, and DOT.
	✅Show the fiat equivalent of the token amount	Display the fiat equivalent for the total token balance and balance breakdown on the Balances page. Display the sum of tokens fiat amounts in the network for each network on the Balances page. Display the fiat sum of all tokens of the selected wallet on the Wallet card (at the top left corner of the screen) For all operations show operation parameters in fiat (transfer amount, staking amount, unstaking amount, network fee, multisig deposit)
	✅Enter the amount of operation in fiat	For all operations where the user has to enter the amount (transfer, start staking, stake more, unstake, return to the stake, withdraw unstaked) added an option to enter the amount in fiat. The fiat amount is converted to the token amount when the user enters it.
	✅See token fiat price change for the last 24 hours in %	Display 24 hours fiat token price change in %
WalletConnect v2 integration	✅Add a new wallet using the Nova Wallet option at the first start	Added a Nova Wallet option for adding the wallet when the user starts the Nova Spektr application for the 1st time. When the user selects the Nova Wallet option then Nova Spektr shows the QR code for Nova Wallet pairing. The user confirms the pairing in the Nova Wallet. The Nova Spektr shows the result of pairing: wallet name input field, and network account address for each supported substrate-based network. The user enters the wallet name and saves a new wallet.
	✅Add a new wallet using WalletConnect v2 option at the first start	Added a WalletConnect option for adding the wallet when the user starts the Nova Spektr application for the 1st time. When the user selects the WalletConnect option then Nova Spektr shows the QR code for WalletConnect pairing. The user confirms the pairing in the wallet application with WalletConnect. The Nova Spektr shows the result of pairing: wallet name input field, and network account address for each supported substrate-based network. The user enters the wallet name and saves a new wallet.
	✅Add a new wallet using Nova Wallet	Added a Nova Wallet option for adding a new wallet on the wallet tab.

		When the user selects the Nova Wallet option then Nova Spektr shows the QR code for Nova Wallet pairing. The user confirms the pairing in the wallet application with the Nova Wallet. The Nova Spektr shows the result of pairing: wallet name input field, and network account address for each supported substrate-based network. The user enters the wallet name and saves a new wallet.
	✅Show the wallet that was added with WalletConnect v2 and Nova Wallet	If the user adds the wallet with WalletConnect v2 then the wallet should be shown in the wallet tab. WalletConnect wallets have to be grouped into a new group “WalletConnect” on the wallet tab. If the WalletConnect wallet was disconnected then show the wallet in the disconnected state. The user can reconnect the WalletConnect session and make operations with the WalletConnect wallet. If some of the networks are not added to the WalletConnect session show a warning about it and propose to reconnect the WalletConnect wallet and add new networks.
	✅Sign operation with WalletConnect v2	When the user creates the operation from the name of the wallet added with WalletConnect then on the operation confirmation screen the “Sign with WalletConnect” button has to be shown. If the wallet is disconnected then show a warning and ask the user to reconnect the wallet. If the network is not added to the WalletConnect session show the warning and ask the user to reconnect the wallet. When the user clicks on “Sign with WalletConnect” then the “Waiting for confirmation” popup has to be shown. The user confirms the operation in the wallet application with WalletConnect (Nova Wallet for example). The Nova Spektr application shows that the operation was confirmed and sent to the blockchain. The Nova Spektr application shows the result of operation execution.
Ethereum address support	✅Pair Single Polkadot Vault wallet for EVM account	When the user scans the Polkadot Vault QR code for pairing a single account for the EVM-substrate chain then the Nova Spektr application should recognize it. When the QR code is recognized the Nova Spektr application shows the screen with the wallet name input field, recognized account.
	✅Pair Multishard	When the user scans the Polkadot Vault QR code for

	Polkadot Vault wallet with EVM chain shards	pairing a multishard wallet that includes accounts for the EVM-substrate chain then the Nova Spektr application should recognise it. When the QR code is recognised the Nova Spektr application shows the screen multishard wallet screen with wallet name input field and, list of recognised accounts.
	✅Support transactions in EVM chains	When the user creates a transaction from the single Polkadot Vault wallet of a single shard in the EVM-substrate chain and then creates the QR code for signing according to the Polkadot Vault documentation Multisig operations are supported as well.
	✅Support Multishard transactions in EVM chains	When the user creates a transaction from the multishard Polkadot Vault in the EVM chain then the Nova Spektr displays the QR code for signing according to the Polkadot Vault documentation
Wallet details, forget and rename wallet	✅Show wallet details	Add the button or link on the wallet tab for each wallet that leads to the wallet details. Wallet details are different for each type of wallet: 1. Watch-Only wallet a. Wallet name b. Wallet address in all supported networks 2. Polkadot Vault wallet a. Wallet name b. Root name and its derivations in networks 3. Single Polkadot Vault wallet a. Wallet name b. Wallet address in all supported networks 4. Multishard Polkadot Vault wallet a. Wallet name b. Root name and its derivations in networks 5. WalletConnect wallet a. Wallet name b. Wallet address in all supported networks
	✅Rename the wallet	Add the rename button or link for each wallet. When the user clicks the button the wallet name becomes edible. The user enters the new name and saves it.
	✅Forget the wallet	Add the forget button or link for each wallet. When the user clicks the button the Nova Spektr asks for the confirmation. If the user confirms the operation then the

		wallet will be removed from the Nova Spektr application. If the user forgets the WalletConnect wallet then the WalletConnect session must be destroyed as well.
Distribute the application to App Store and Microsoft Store	⏳Add the application to the Microsoft Store, App Store	The application is ready to be published: 1. CI is ready [GitHub link] 2. Illustrations and texts are prepared Novasama team is working on App Store and Microsoft Store account creation for Nova Spektr publishing. Nova Spektr will be published as soon as corporate store accounts are ready.
In-app updates	✅Provide notification for updating the application when the new GitHub release is made	When the new GitHub release is made then the Nova Spektr shows the dialog that asks the user to update the Nova Spektr application to a new version. If the user confirms the update then the application restarts with a new version.
	✅Turn on/off auto updates in Nova Spektr settings	On the Settings screen the toggle for turning on/off auto updates was added.
Cross-chain transfers	✅Make cross-chain transfer	Add a destination network selector on the transfer screen. By default, the destination network equals the source network. The list of destination networks is composed based on the configuration that describes to which network each asset may be transferred. If the destination network is different from the source network then the Nova Spektr makes a cross-chain transfer. For the cross-chain transfer, Nova Spektr shows the network fee (a fee that the user has to pay in the source network) and a cross-chain fee (a fee that the user has to pay in the cross-chain operation)
	✅Added Myself button [extra feature]	When the user makes a cross-chain transfer then the Myself button is shown in the recipient's address input field.

Additional deliverables

Throughout the development of Milestone 3, our team conducted extensive research, leading to the discovery of previously unknown requirements among users and stakeholders. Particularly, the additional requirements for Dynamic Derivations were discovered and

implemented. At the same time, it was figured out that a web-hosted version of the application is better for use by individuals. For that purpose, the team has deployed the development version of the Nova Spektr for further improvement in terms of the next Milestone. The full scope of additional deliverables is shown in table 2.

Table 2. Milestone 3 additional deliverables

Dynamic derivations feedback	1. Create only Polkadot & Kusama keys by default [issue] 2. Exclude info button from the tab order on the keys generator screen [issue] 3. Use Jdenticon everywhere for the Polkadot Vault wallet [issue] 4. Use consensus network name for parachains on the Key Generator screen [issue]
Assets page feedback	Hide zero balances toggle is switched off by default on the Assets page [issue]
Multisig feedback	1. Allow to use Polkadot Vault wallet accounts as signatories in the multisig wallet [issue] 2. Allow to use SSO (Google and GitHub) for login into Matrix [issue]
Web-hosted Nova Spektr	Deployed Nova Spektr as a web application so that it is available by URL from the web browser [issue]. The **dev version** of the web-hosted Nova Spektr is deployed and available using link
Staking controller account removal support	The controller account was deprecated [PR]. As a result, the Nova Spektr team has made changes accordingly.

Re-prioritized deliverables

It was planned that on the staking dashboard the following information would be added:

1. Show unstaking tokens and unstaked tokens for each account (shard)
2. Show filters for multishard wallet for quick filtering of the shards list by the staking state (staking, unstaking, unstake completed, validator is slashed, a validator is not elected)
3. Show the staking state column in the nominator list (staking, unstaking, unstake completed)

In terms of the design phase it was decided that unstaking and unstaked tokens should be moved to the separate screen as shown in Figma mockups. This requirement takes more than

60 man-hours of development. As a result, it was decided to postpone this feature taking into account additional deliverables and feedback processing.

2. Problems solved

1. Dynamic derivations

Through a collaborative effort with the Polkadot Vault team, we have successfully implemented dynamic derivations feature that allows to:

1. Easily to pair Polkadot Vault with the Nova Spektr and create (derive) keys using the Nova Spektr (figure 3)
2. Improved sharded account UX united shards in a single account from the user perspective
3. Import and export keys from/to Nova Spektr in a secure way (figure 3)
4. Easily upgrade Polkadot Vault because derived accounts are stored in the Nova Spektr

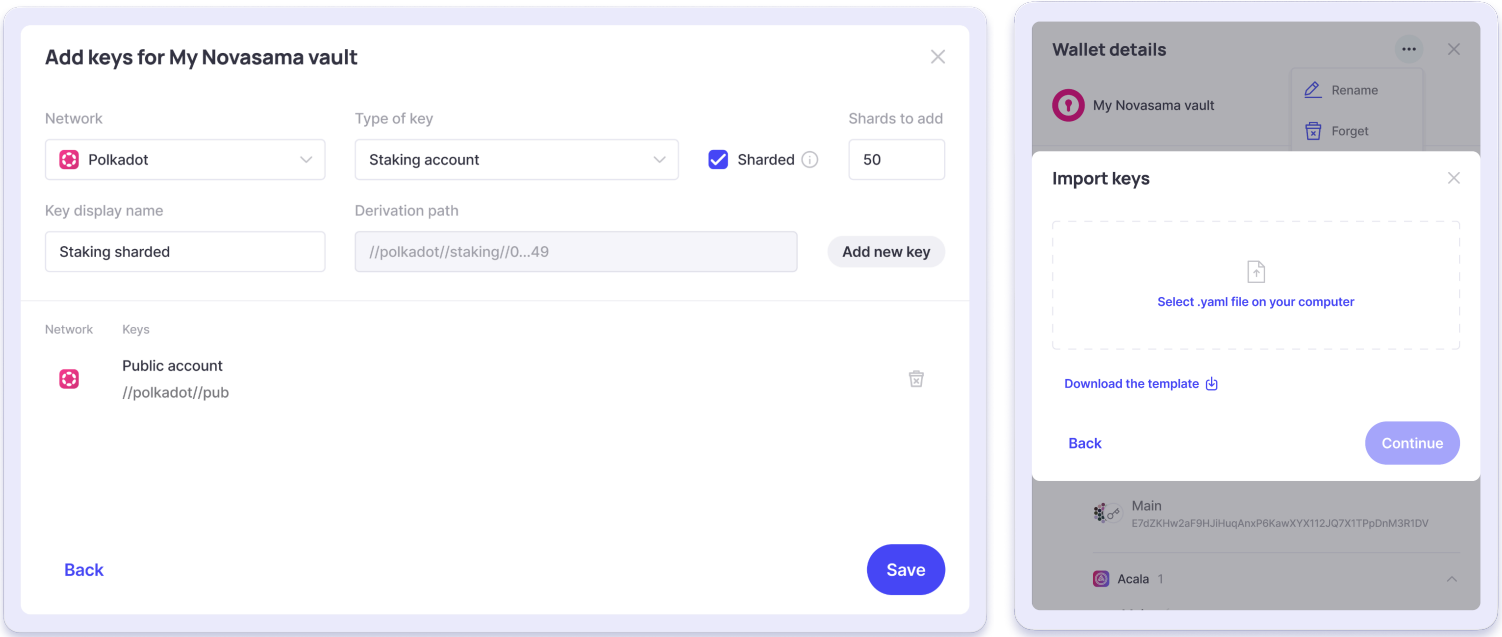

Figure 3. Add keys screen and Import keys screen for Polkadot Vault pairing with Dynamic Derivations feature

2. WalletConnect v2 integration

WalletConnect is one of the most popular options for connecting wallets with dApps in the general blockchain landscape. Having a WalletConnect (Nova Wallet) pairing (figure 4) support

the Nova Spektr is available for use by many more users comparing the initial release with only the Polkadot Vault support.

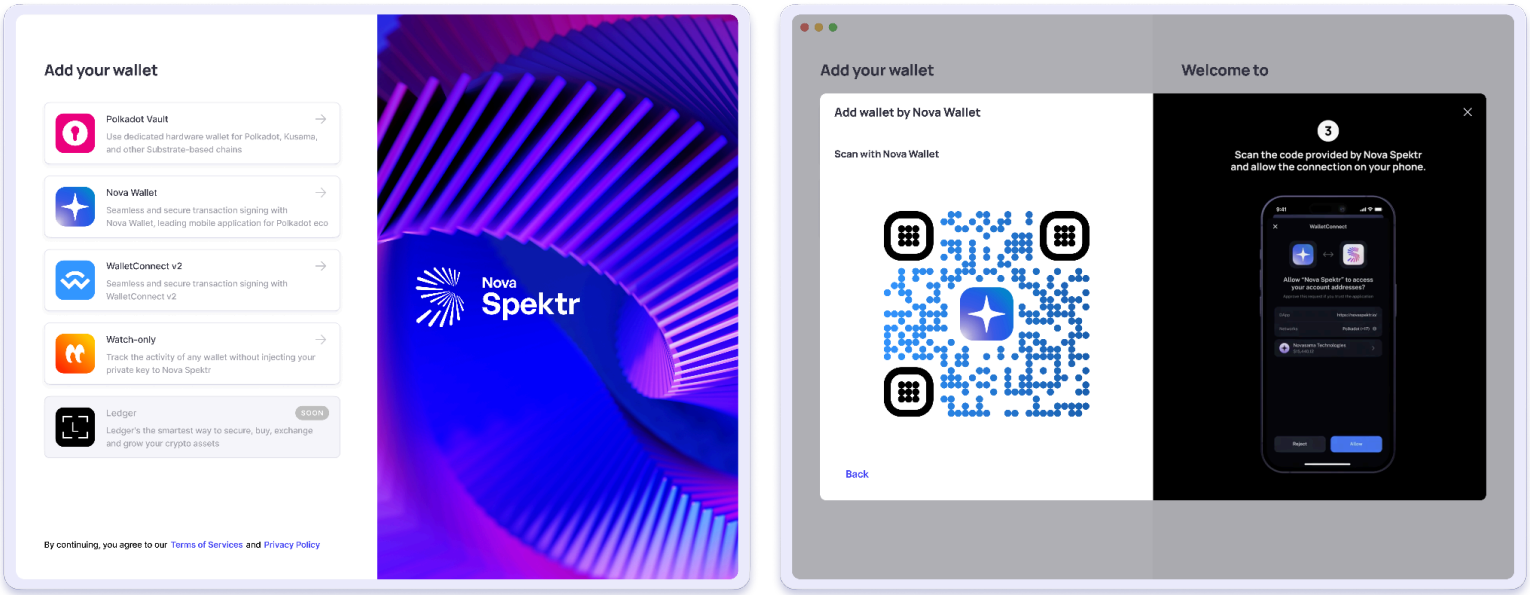

Figure 4. Pair Nova Wallet with Nova Spektr

3. Proxy accounts and transactions

Create Proxy and Pure proxy features were implemented. Besides that, the proxy discovery feature was implemented that allows a user to find all proxied accounts (even if it was created outside the Nova Spektr) that may be operated with the user's accounts automatically on Polkadot, Kusama, Moonbeam, Westend.

In terms of UX/UI process, the easy and understandable proxy account usage was designed. The user manages a proxied account (named '*Delegated to you wallet*' in Nova Spektr). Being a flexible application the approach of operating with Delegated to you wallet is the same for regular proxy (figure 5), pure proxy, prox and pure proxy combined with multisig (figure 6).

A flexible signing approach was implemented and allows signing from the name of a proxy account which is a great improvement and further supports nested proxies, multisigs in any combination.

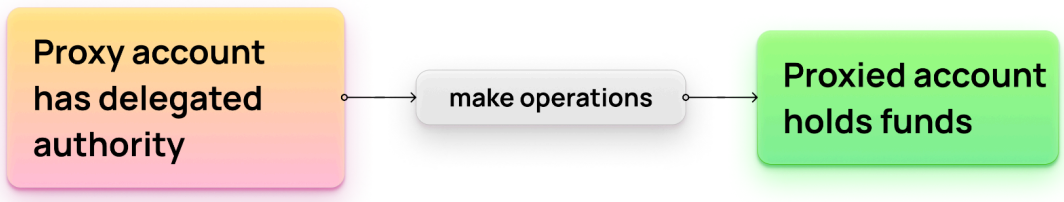

Figure 5. Proxy account with it's proxied account

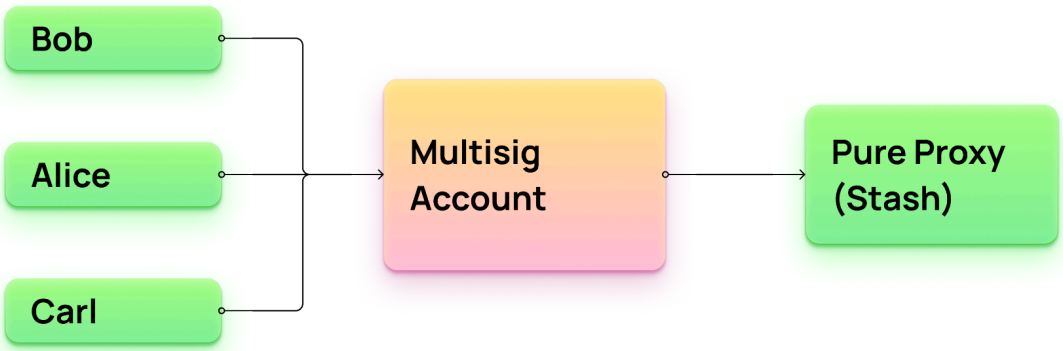

Figure 6. Pure proxy account with multisig

4. Cross-chain transfers

The Nova Spektr team provided a convenient, standardized (in terms of UI) solution for sending assets between the chain in the Polkadot & Kusama ecosystem (figure 7).

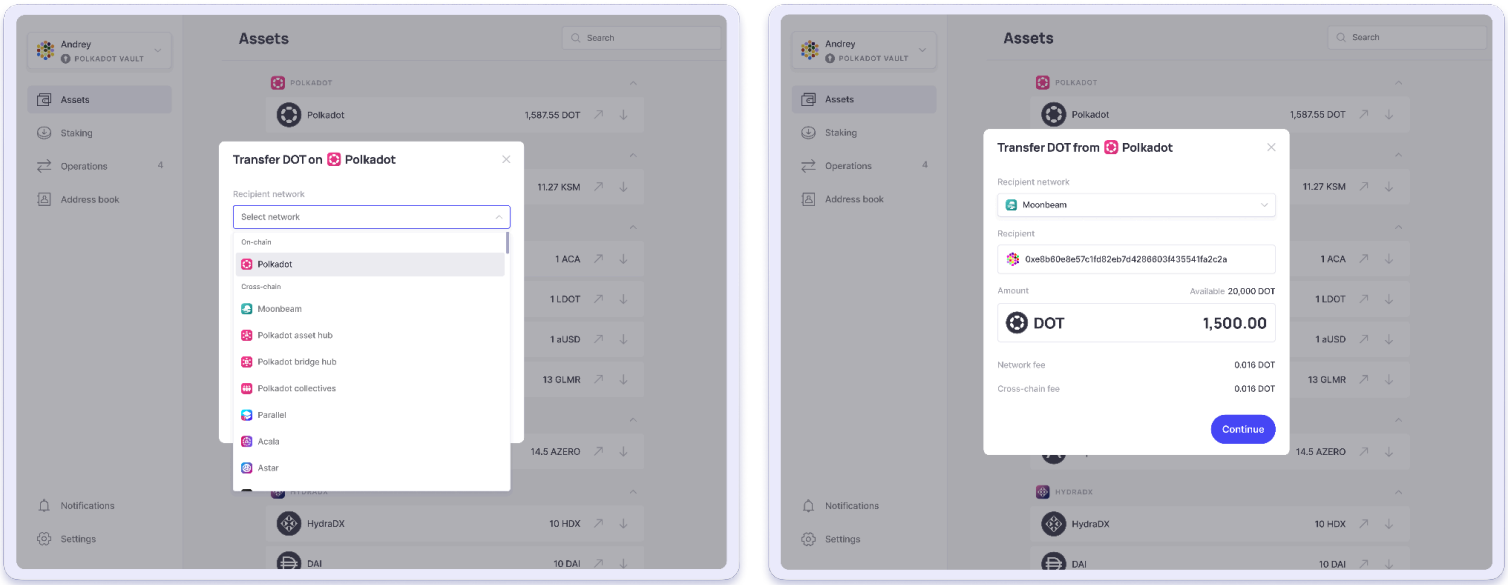

Figure 7. Create a cross-chain transfer in Nova Spektr screen

5. Fiat values integration

Fiat values of tokens were integrated on the Balances screen (figure 8), on the create (figure 9), and on the confirm operations screen. Show the total wallet fiat balance on the wallet card in the UI.

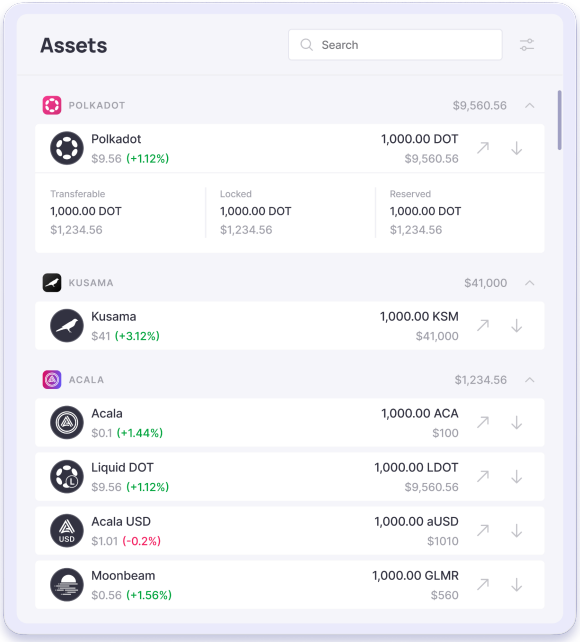

Figure 8. Show assets fiat balance on the Balances screen

In the Nova Spektr users are able to enter the operation amount in fiat (figure 9). Nova Spektr calculates the token amount based on the token-fiat exchange rate.

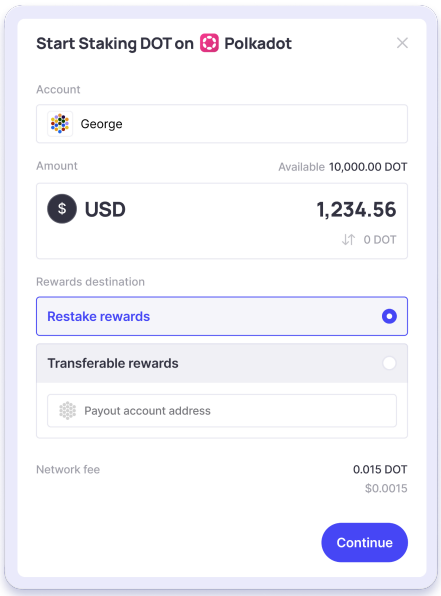

Figure 9. Enter the operation amount in fiat (USD)

On the Settings page the user is able to select a fiat (and BTC, DOT, ETH tokens) to be used as a conversion (figure 10).

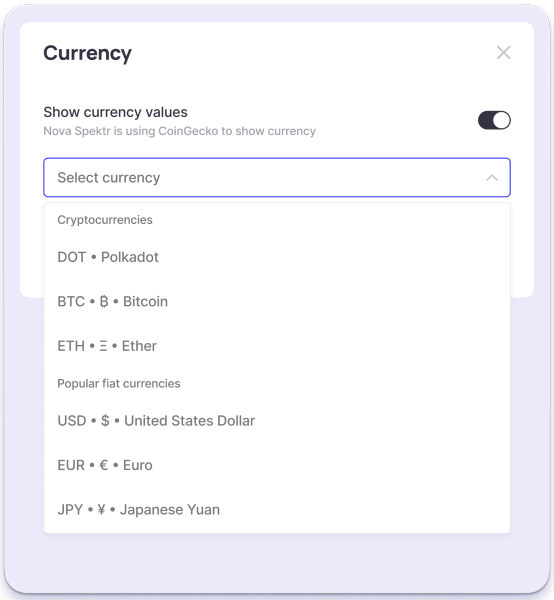

Figure 10. Select fiat currency in Nova Spektr settings

6. Ethereum address support

The Nova Spektr team has Implemented Ethereum address support that includes pairing EVM-substrate chain accounts with Polkadot Vault and WalletConnect, operation signing, and testing the integration.

7. Wallet details, forget and rename wallet

A new wallet details screen was implemented for all supported wallet types (Watch-Only, Single Polkadot Vault Wallet, Multishard Polkadot Vault) and newly developed wallet type - Wallet Connect Wallet (figure 11).

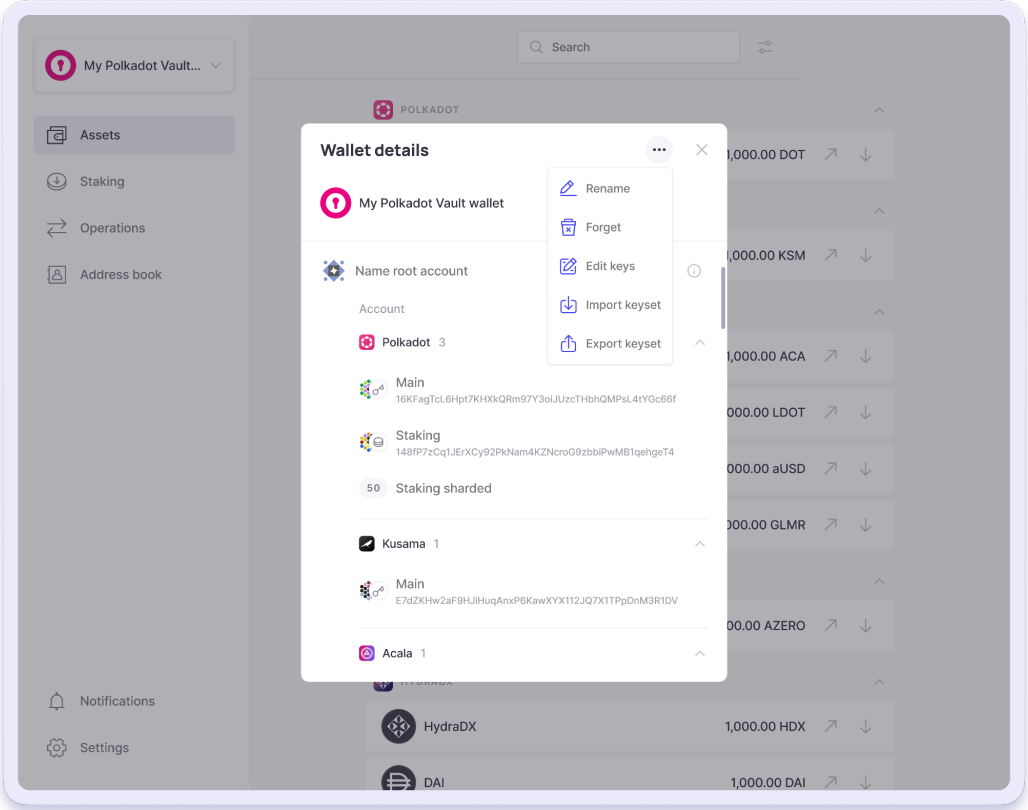

Figure 11. Polkadot Vault wallet details screen

The ability to rename wallet and forget/remove was added.

8. In-app updates

Also in-app updates with GitHub releases feature was implemented (figure 12).

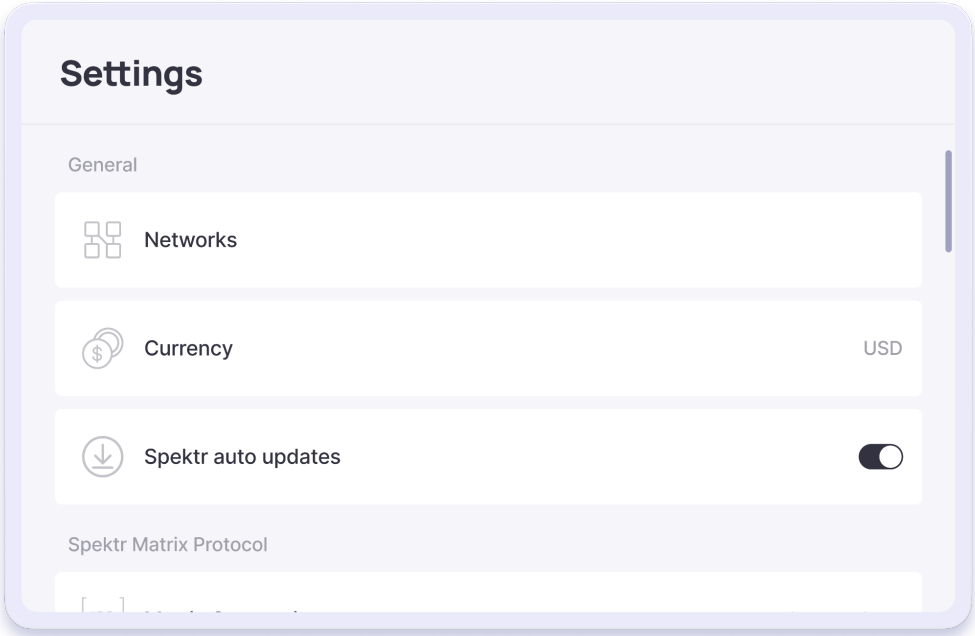

Figure 12. Turn on Nova Spektr auto updates in Nova Spektr settings

3. Milestone 3 timeline

In terms of Milestone 3 the team has released 8 major releases with new features. The list of releases is provided in table 3.

Table 3. Milestone 3 release dates

Release	Release date
v1.1.0 Cross-chain transfers release	September 19, 2023
v1.2.0 Fiat values release	October 6, 2023
v1.3.5 WalletConnect and Nova Wallet integration release	November 10, 2023
v1.4.1 Dynamic Derivations release	December 21, 2023
v1.4.2 Forget wallet and wallet details features release	December 26, 2023
v1.5.0 Processed users' feedback	February 29, 2024
v.1.6.0 EVM substrate chains support release	March 18, 2024
v1.7.0 Proxy accounts and proxy operations	April 11, 2024

4. Transparency and open source

Nova Spektr is an open source application under Apache 2.0 License. The development process and activities may be tracked with a public GitHub development project (figure 13). Issues and feedback may be reported directly to GitHub.

Ok

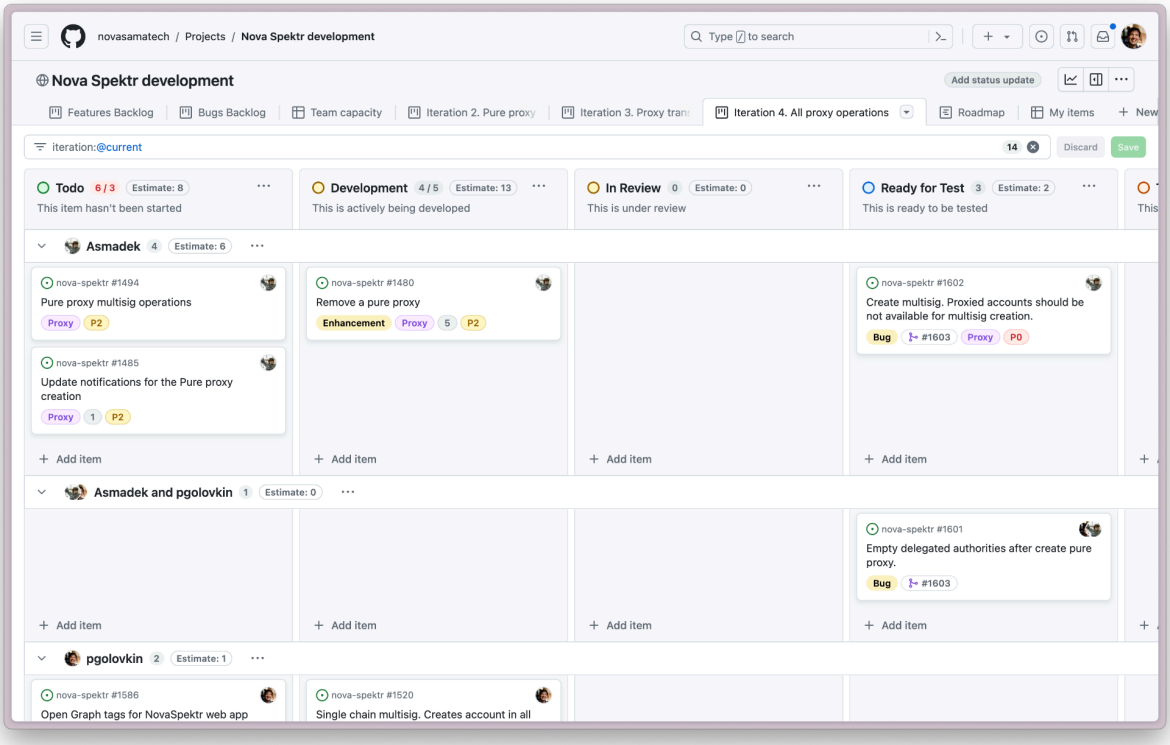

Figure 13. Nova Spektr development dashboard

Appendix

Appendix A. Nova Spektr links

1. Website: https://novaspektr.io
2. Twitter: https://twitter.com/NovaSpektr
3. Telegram group: https://t.me/NovaSpektr
4. GitHub: https://github.com/novasamatech/nova-spektr
5. Wiki: https://docs.novaspektr.io/
6. Medium: https://medium.com/@NovaSpektr

Appendix B. Novasama Technologies links

1. Twitter https://twitter.com/NovasamaTech
2. YouTube https://www.youtube.com/@NovasamaTech
3. GitHub https://github.com/novasamatech