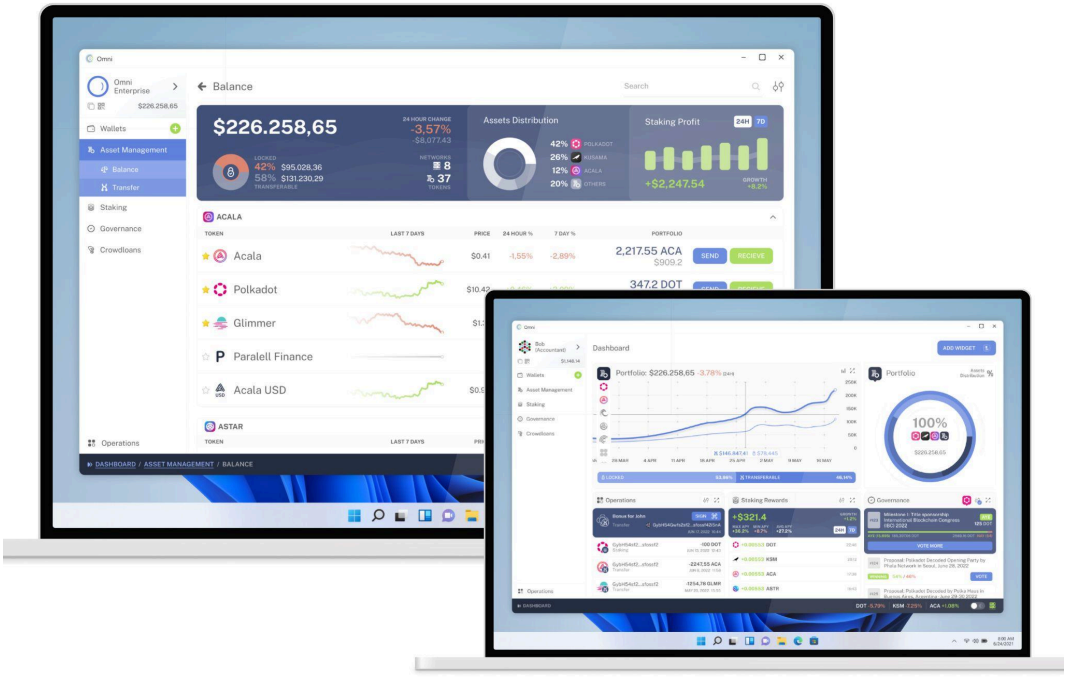
Omni Polkadot Enterprise desktop app Milestone 2: Public release

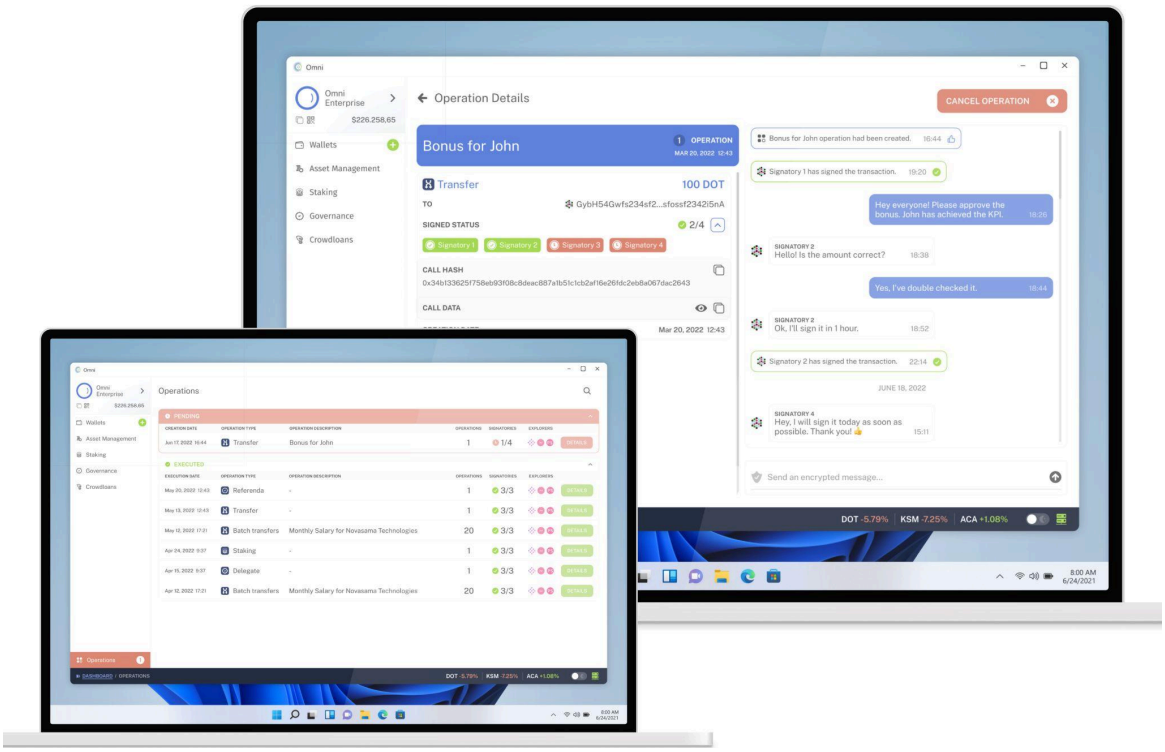
Proponent: 15UHvPeMjYLvMLqh6bWLxAP3MbqjjsMXFWToJKCijzGPM3p9 (Nova Foundation)
Date: June 2022 (discussion phase), July 2022 (onchain submission)
Requested allocation M2: 58559 DOT / 431 760 USD (see details)
Proposal for funding Milestone 2 of Omni Enterprise desktop app:

- Public release of Omni Enterprise app:
  - Foundation for Enterprise app:
    - Implementation according to defined Quality Attributes
    - Light clients integration
    - Data verification for parachain nodes
    - Secure protocol integration for encrypted communication
  - Initial Omni Enterprise v1.0 feature set:
    - Easy-to-use multisig accounts
    - Integration with Parity Signer
    - Assets management across all Polkadot eco networks
    - Full set of features



Picture — Omni Enterprise high-fidelity Dashboard prototype

1. Context of the proposal



Picture — Omni Enterprise high-fidelity Operation prototype

Omni Enterprise is a desktop enterprise application that works around the limitations of Polkadot.js Apps and can provide a single point-of-view for stakeholders with advanced needs in the entire ecosystem. It should sync shards (i.e. multi-sig & proxies should not need manual construction for each signatory), 3 points - stakeholders discussion, stakeholders actively participate in product development, aiming to provide complete solution not only staking but balances, transfers complex proxy/multi-sig combinations, should amalgamate multiple operations into a single transaction, and handle staking, asset management, and voting across all shards in a single user-operation.

The goal is to primarily **handle all of these situations with minimum effort from the user side**. Focused on security, Omni Enterprise application aims to provide convenient access for complex token management & create complex operations which may involve several shards.

For the past 3 months, the Novasama Technologies team has implemented the PoC application, conducted several demos with Polkadot and Kusama ecosystem users. Omni: Polkadot Enterprise desktop Milestone 1 report

The updated **version of Omni Enterprise software requirements specification** was delivered, extended with results from researches, feedback, and PoC implementation:
Omni Enterprise SRS M2 (proposal version)

2. Problem statements

2.1. Easy-to-use multisig accounts

Problem 1: There is no easy-to-use application that allows to manage multisig accounts and multisig transactions without sharing the signatories' addresses, threshold and multisig call data.

Problem 2: For sharing multisig accounts and multisig transactions details, signatories use different, possibly insecure communication channels. That may lead to data leakage and forgery.

Problem 3: Even if the secure communication channel is used, the signatories have to operate the data manually copying it from the communication tool to the application that they use and vice versa.

Solution: The Omni Matrix Protocol (OMP) was designed for secure messaging exchange, using the Matrix protocol for it.

With the OMP the User will be able to use the Omni Enterprise application for encrypted message exchange that will allow to:

1. Secure, automated multisig call data exchange
2. Secure, automated multisig account information exchange
3. Encrypted chat with signatories
4. Any other data secure exchange between the Omni Enterprise application users for providing better user experience

2.2. Light clients integration

Problem 1: Public blockchain nodes usage opens up the possibility of the following attacks:

1. Censorship including data corruption, disabling access or publication and fingerprinting
2. Public node may be turned off or corrupted
3. Man-in-the-middle attack

Problem 2: Using Substrate connect as a node light client instead of RPC connection to the public nodes has technical constraints:

1. Only 3-5 instance may be run simultaneously on the PC or laptop
2. Substrate-connect is not supported by all parachains

Solution: Taking Substrate connect limitations into account the Data verification approach was designed. The main idea is to keep the Omni Enterprise application connected to the relay chains (Polkadot and Kusama) with the Substrate-connect, to parachains via RPC nodes, and will use trusted data from relay chains to verify data from parachain remote nodes. In that case Omni Enterprise application trusts the data read from the relay chain. Based on the parachain data the state root should be calculated (with Merkle Patricia tree) and compared with the parachain state root from the relay chain (trusted value from Substrate-connect), allowing Omni Enterprise application to verify the data which is received from parachain remote nodes. The algorithm is described in detail in the research docs.

2.3. Integration with Parity Signer

Problem 1: The Ledger is one of the most popular hardware wallets that supports DOT and KSM. The runtime upgrades make the usage of Ledger hardware wallets not appropriate because the hardware wallet application has to be updated after the runtime upgrade before the User will be able to use it. The Parity signer solves the runtime upgrade problem by the offline metadata updates.

Problem 2: There is no easy-to-use desktop application with Parity Signer support for transaction signing.

Problem 3: The Parity signer supports only Polkadot, Kusama, Westend out of the box. However there is an ability to upload other chains spec and metadata for parachains. The chains spec and metadata should be generated and signed in order to be uploaded to the Parity signer.

Solution: Transaction signing with the Parity Signer should be supported by the application. The signing flow should be easy-to-used and intuitive for the User. The Metadata portal should be forked and extended in order to support parachains so that the User will be able to add parachains chain spec and metadata to the Parity Signer application.

2.4. High quality enterprise desktop application for Polkadot & Kusama ecosystem

Problem 1: There is no enterprise desktop application that allows users to manage all assets across and have access to advanced features (staking, multisig, governance, DeFi) across all networks in the Polkadot & Kusama ecosystem.

Solution: The Omni Enterprise application should be able to connect to multiple Polkadot & Kusama networks simultaneously. The Omni Enterprise application should support different

asset standards (assets, balances, ORML, and other pallets). The Omni Enterprise should provide advanced features of the Polkadot ecosystem such as multisig operations, workflow with proxy accounts, staking operations, crowdloans, participating in governance activities, connecting to DeFi protocols, etc. The application should be able to get fiat values for different assets and get the transaction history from trusted sources. According to the industry standards the application should be fail-safe, provide easy onboarding, error handling, and localisation. The application should provide intuitive UX to the User and also include localisation, intuitive onboarding, industry standard features like operations history, fiat values, notifications, network connection management, address book.

3. The feature set of the proposal

Theme	Feature	Description
Application framework [1 week]	Design system	Develop the design system for the application mockups implementation and prototyping.
	Localisation	Change language in the application support
	Technology stack for the Desktop cross-platform application	Electron technology stack, Polkadot js library, Substrate-connect, Adaptive design, HTTP(s), WS(S) support, Tailwind, ESlint, Unit testing library, Integration test library, Index DB key-value database, Matrix SDK, Matrix encryption
	UI components library	Buttons, Inputs, Input select, Labels, Carousel, Toggl, Checkbox, Tabs, Titles. Steps, Lists, Tables, Universal modal window, All effects and states for components
	CI/CD	Linter checks, Unit tests, Integration tests, Release for macOS, Windows, Linux
Landing page [1 week]	Landing page with the product description and links to the release	Landing page with the product description Team description Roadmap Github link Releases link Social media
Onboarding flow [2 weeks]	Check camera	The Omni Enterprise application checks if camera exists Check if camera is working and has permissions for the Omni Enterprise application
	Add wallet by Parity Signer	Add wallet by scanning QR code from the Parity Signer This feature is available only if camera is available Address and name validation after QR code scanning
	Add watch-only wallet	Add wallet by network address (Watch-Only) wallet so that the User will be able to check balances, transaction history without injecting private key or pairing with hardware wallet Wallet address and name validation
	Login to Matrix	Login to the Matrix with login/password with error handling Show notification about Multisig availability in the Omni Enterprise with Matrix only Tutorial about Matrix account Skip login to the Matrix
	Matrix session	Verify Matrix session with string key for file

Theme	Feature	Description
	verification	
	Create Matrix account	Add the link to the Element registration page https://app.element.io/#/register and ask the User to use login/password Ask User to save keys for further verification
	Connect to networks	After the onboarding: 1. Connect to Polkadot, Kusama with Substrate connect. 2. Connect to all parachains with RPC. 3. Read balances and show balances page.
Balances [1 week]	Balances service	Subscribe to balances in all networks Implement the service that stores balances for accounts into the database from subscription and the Omni Enterprise application shows the information from the database (cache) Error handling for WSS and Substrate connect connections
	Show balances for all supported networks	Balances screen Get balances from the database (cache) Shimmering effect for loading state Use Data verification service for data from WSS connection
	Hide zero balances	Toggle for hiding zero token balances Hide networks where user doesn't have tokens
	Show transferable, locked (staked, reserved, redeemable, unstaking) balances	Show token breakdown by categories
	Receive screen	Show receive screen for getting tokens with QR code or (and) address Restrict receive for watch-only wallet. The modal window with restriction explanation should be shown.
Data verification [1 week]	Verify data from the Parachain RPC connection based on relay network Substrate-connect connection	Implement Merkle Patricia tree algorithm Read proofs from the relay chain Read proofs and keys from the parachain Encode/decode Merkle tree nodes
	Parachain data verification test coverage	Unit tests for parachain data verification
Sign transactions	Parity Signer QR code interaction	Generate transaction QR code in the Omni Enterprise Scan the signature QR code by the Omni Enterprise Loader when transaction is being sent to the blockchain

Theme	Feature	Description
(transfers) with Parity Signer [1 week]		Wait until the node accepts the transaction
	Send transaction to the blockchain and track it's execution	Send transaction to the blockchain node Check if node has accepted the extrinsic. Get the extrinsic state from the blockchain. Signing flow should accept the validation function for the operation that it being signed
	Synchronize OMP and the transaction status	After signing, the User should be navigated to the operation history or MST details. For the Muultisig the Omni Enterprise application should send the OMP event when node has accepted the transaction.
Wallet management [1 week]	Create wallet data model with custom accounts	Common account (public key) for all parachains and relay chains. For some chains the User should be able to specify custom account (public key) Save wallet type: Watch mode or Parity Signer wallet
	Wallet list screen	Show the list of added wallets Empty list state
	Wallet settings screen	Group custom accounts at the top of the screen Show account address for different networks Button for change/reset custom account
	Change custom account	Screen where the user may specify the address for specific chain Change chain account for specific network Add custom account with Parity signer (by QR code) for Parity Signer wallet type Add custom account in watch-only mode for Watch-only wallet type Add custom account validation
	Reset custom chain account	Reset custom chain account for specific network Confirmation for the reset
	Forget wallet	Forget wallet Forget wallet confirmation
	Add wallet	Add new wallet to the application Add the wallet by Parity Signer Add watch-only wallet Add wallet validation
Address book [1 week]	Address book (list)	Empty state Data model (name, public key, matrix id) List screen Edit, remove buttons Copy address, show account avatar
	Add contact	Screen for add contact with name, SS58 address, matrix id

Theme	Feature	Description
		Save the contact to the database Add contact validation (including duplication check)
	Edit and remove contact	Screen with name, SS58 address, matrix id Only the name and SS58 address may be changed Remove contact feature with the confirmation Update Multisig accounts where this address is being used
Metadata-portal for parachains [1 week]	Run metadata portal for Omni Enterprise	For the Parity repository https://github.com/paritytech/metadata-portal Make configuration Deploy to the github pages
	Add parachains for Omni Enterprise	Add parachains, solo chains and generate specs and metadata QR codes
	UI rebranding	Change links Change logo Add network logos
	Set up metadata signing flow	Set up a metadata signing process so that the QR codes will be trusted.
	Add a link to the metadata portal on the signing flow	On the transaction Signing flow add the link to the metadata portal where the User can find updated QR code
Transfers [2 weeks]	Create transfer screen	Create transfer screen with network, asset, amount Select destination address from contacts or manually. The address should be shown in the selected network format. Validation (address, amount for sender and for receiver, ED checks) Restrict transfer for watch-only wallet. The modal window with the restriction explanation should be shown.
	Unsigned operations queue	Screen with the list of unsigned operations (transfers, MST operations) Empty state, pagination Add the transfer to the unsigned operations queue Show transfer in the unsigned operations queue Navigate to signing
	Confirm transfer screen	Show transfer details (source, destination, asset, amount) Remove button Sign button
	Remove transfer from queue	Remove transfer from the queue
	Send transfer for signing (Show QR)	Navigate to the Parity signer flow Validate amount, ED before signing
	Signing flow (scan QR and send to the blockchain)	Validate amount, ED one more time after the signing before sending the transaction to the blockchain Navigate to the Transfer details and remove the transfer from from the

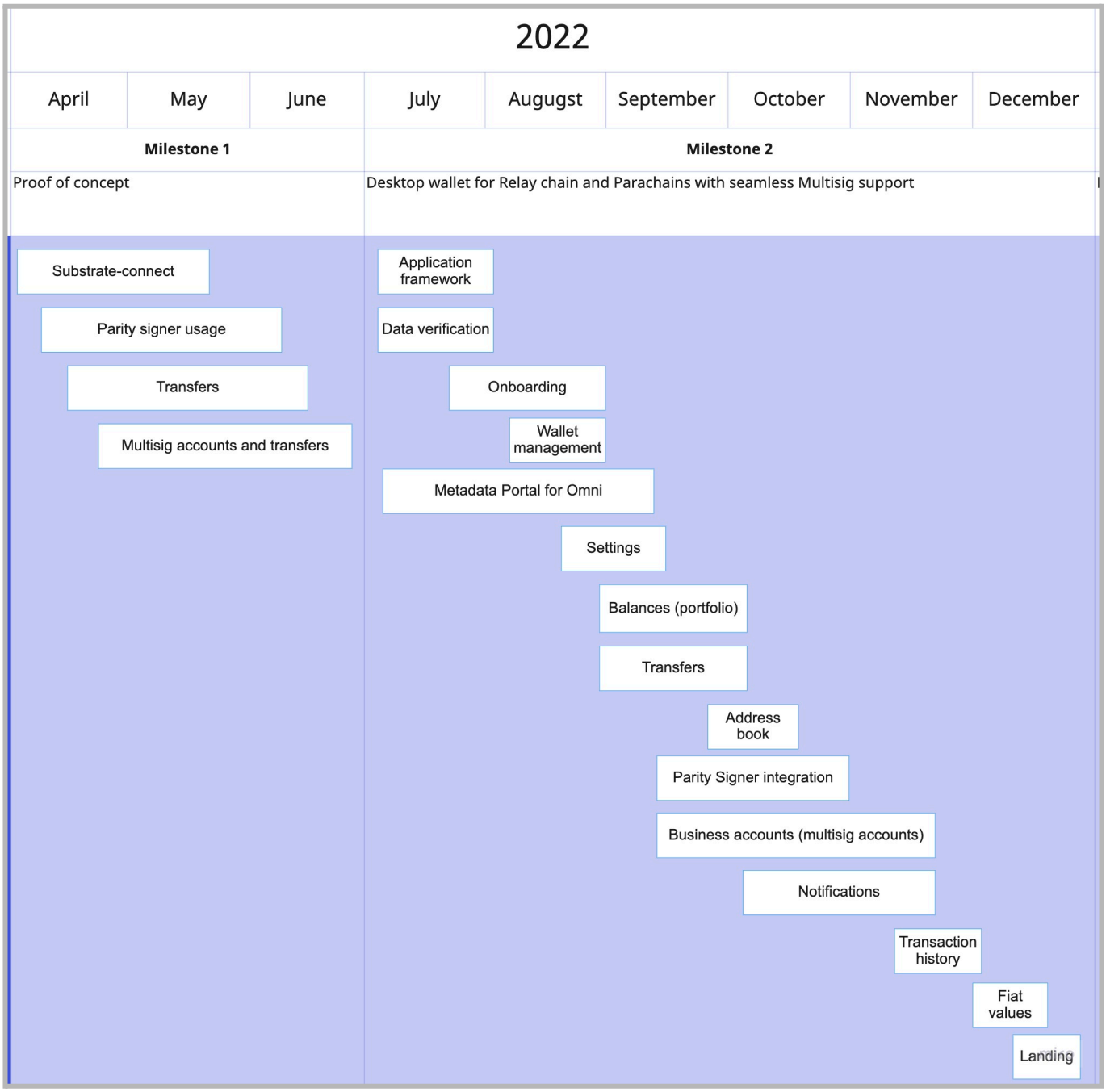
Theme	Feature	Description
		Operation queue Error handling
Corporate accounts (multisig account) [3 weeks]	Create multisig account	Create multisig account screen Select signatories from address book and User's wallets, Multisig account threshold should be more then 1 Data validation (*threshold > 1, signatories number <= threshold*) If a Multisig account already exists then the Omni Enterprise application should notify the user about it. Show warning if *threshold == number of signatories* Sign multisig account creation with Parity Signer. Check the Multisig account and OMP consistency. Create multisig account feature should be available for Parity Signer wallets only
	Multisig account details screen	Show multisig account name, signatories, threshold Show edit option for the Multisig account name
	Forget multisig account	Remove multisig account from wallets Ask the User for the confirmation Send OMP event that account was removed
	Initiate multisig transfer	Create transfer screen (same as non-Multisig transfer, the deposit should be added and validation has to be changed) Add the name for the multisig transaction to the OMP Show transaction fee, deposit for the depositor Validation (MST account transferable amount should be checked, ED checks) Send OMP event
	Remove multisig transfer from the queue if it wasn't signed	Show remove button Send Decline OMP event Hide declined transaction from the queue
	Multisig transaction details screen	Show Multisig transaction information Show Quorum information Show events in the Chat screen (from the OMP)
	Multisig transaction details chat	Show chat messages (from the OMP) Send chat messages (with the OMP)
	Sign multisig transfer	Multisig transaction details screen Use Parity Signer for signing Validation before signing and before sending to the blockchain After signing the User should be navigated to the Multisig details screen For the Multisig the User should wait for finalizing the transaction before sending OMP MST event Sign multisig transfer feature should be available for Parity Signer wallets only

Theme	Feature	Description
	Cancel multisig transfer	Show cancel button for the depositor Ask for the cancel confirmation Sign cancel transaction with Parity Signer Send OMP cancel event Remove Multisig operation from the queue
	Deprecate multisig actions if Matrix account is not specified	Deprecate create Multisig transaction if Matrix account is not specified Deprecate create Multisig account if Matrix account is not specified
Notifications [1 week]	Multisig account created	Implement duplicate resolution strategy for the Omni room creation Create notification in Omni React to notification Check that Multisig account creation was signed Change the Multisig account name on import Match signatories' address with user's wallets, address book
	Multisig transaction initiated	Create notification in Omni React to notification
	Multisig transaction signed	Create notification in Omni React to notification
	Multisig transaction executed	Create notification in Omni React to notification Move transaction from queue to history if it was executed
	Multisig transaction canceled	Create notification in Omni React to notification Move transaction from queue to history if it was canceled
	Multisig transaction declined	Create notification in Omni React to notification Move transaction from queue to history if it was canceled
	Multisig account forgotten	Create notification in Omni React to notification
	Notifications list	Show list of notifications Mark notification as read if the User made the action Navigation rules from notifications to Omni screens Notifications pagination
	Mark notifications as read if user reacts to it	Mark notifications as read if the User reacts to it
Operation history [2 weeks]	Transaction history list screen	Transaction name (type: staking, transfer, other extrinsic), Fee, Event, Era, Block number, Date, Link to block explorer Filtering
	Get history from	Use the GraphQL for getting history for account

Theme	Feature	Description
	SubQuery	Use SubQuery cursors for pagination Make the datasource changeable so that the Omni Enterprise application will be able to use another datasource for the transaction history
Application settings [2 weeks]	Networks management	Network connection management (Substrate connect, WSS) Select the the predefined remote node Specify address of the node different from the predefined Group networks on the network management screen (connected, not connected)
	Network status and notification (in the toolbar)	Show network connection status Notify the User about the network connection problem Navigate from toolbar to the Network settings screen
	Change language	Show available languages Switch language
	OMP settings	Change the OMP password Reconnect to the OMP
	OMP status and notification in the toolbar	Show the OMP connection status Notify the User about OMP problem Navigate from toolbar to the OMP settings screen
Fiat values [1 week]	Get fiat values	Use CoinGecko API https://www.coingecko.com/ru/api/documentation simple/price Save data into the application cache (database)
	Show fiat values	Show fiat values for assets on the Balances screen, Create Transfer screen Show 24h rate change on the Balances screen Highlight the rate change

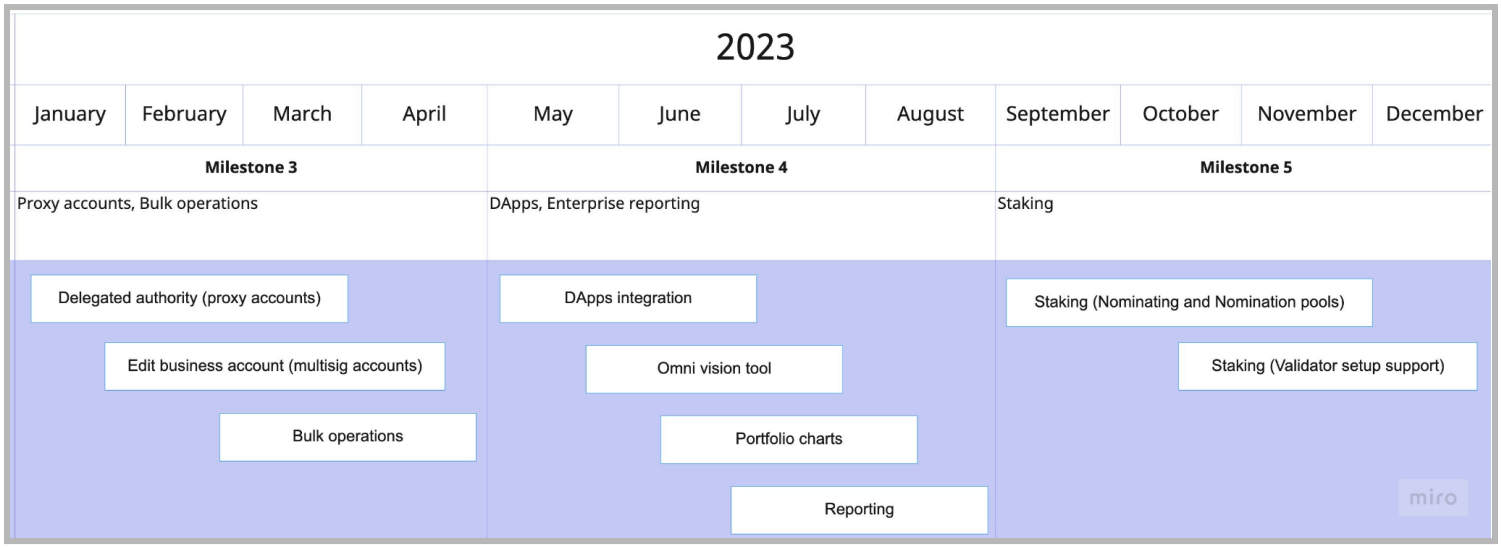
Product roadmap

The roadmap for the year 2022nd (Milestone 1 and Milestone 2) is in the picture below. The detailed roadmap contains 7 Milestones till August 2024th.

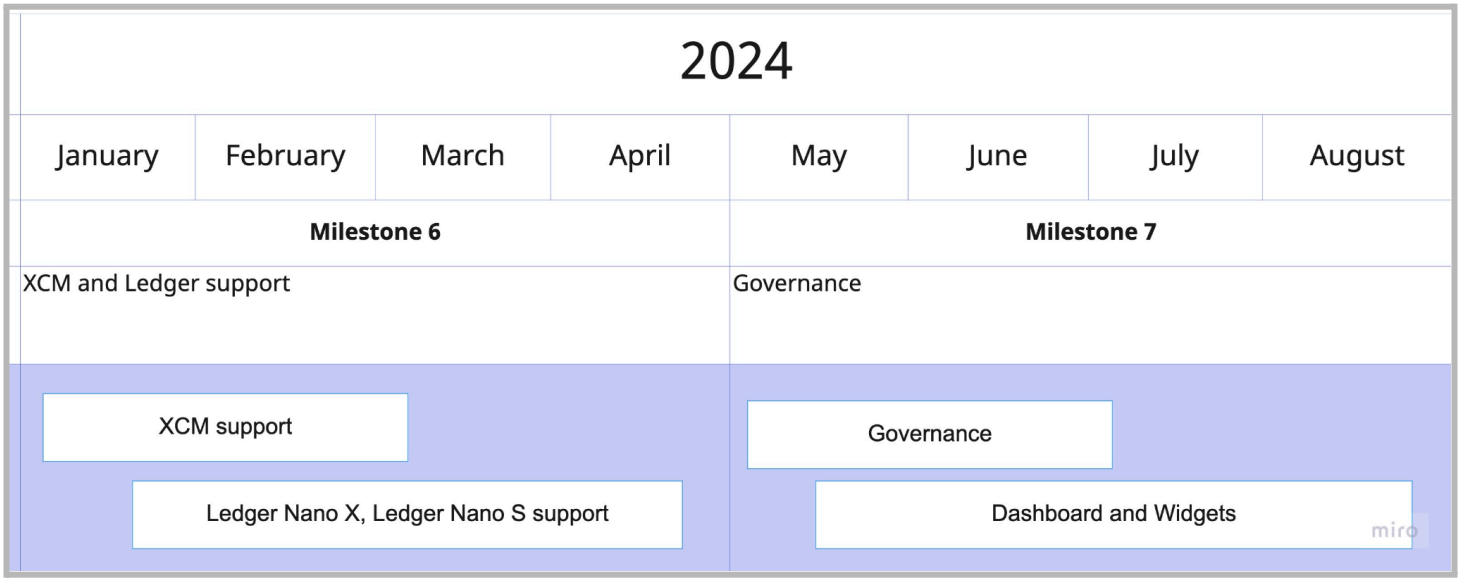


Picture — Omni Enterprise roadmap: Milestones 1 and 2

The Milestone 3 scope and further milestones' feature sets are not final and may be changed according to the feedback and ecosystem changes. The dates also may be changed according to the Omni Enterprise application team size.



Picture — Omni Enterprise roadmap: Milestones 3, 4 and 5



Picture — Omni Enterprise roadmap: Milestones 6 and 7

4. Projected allocation & budget

Omni Enterprise app team:

1. Pavel Golovkin — Engineering Team Lead
2. Stepan Lavrentev — Lead QA Engineer
3. Balázs Kovács — UX/UI Designer
4. Aleksandr Makhnyov — Senior JS Engineer
5. Yaroslav Grachev — Senior JS Engineer
6. Anton Khvorov — CEO, Product design
7. Ruslan Rezin — CTO, Software Architect
8. Valentin Sergeev — Head of Research

Proposal Execution:

- **5 months, 20 weeks (July 2022 — December 2022)**
  - Public demos: **every 4 weeks or 2 weeks (depending on project state)**
  - Public release: at the end of the development (in 20 weeks)

Payment details:

- **DOT from Polkadot Treasury:** 58559
  - **Hourly rate:** 120 USD
  - **Total team hours:** 3598 (see table below)
  - **DOT price**: 7.373 USD (EMA30 rate from Subscan on submission date)
  - **Total USD:** 431 760

Theme	Man-hours Estimate (man hours)				
	JS 2 FTE	Design 1 FTE	QA 1 FTE	Team Lead 1 FTE	Total Team
Application framework & foundation	202	101	19	12	334
Onboarding flow	158	79	79	79	396
Balances	62	31	31	31	156
Data verification	67	34	34	34	168
Sign with parity signer	77	38	38	38	192
Wallet management	115	58	58	58	288
Address book	38	19	19	19	96
Metadata portal	38	19	19	19	96

Transfers	130	65	65	65	324
Multisig	288	144	144	144	720
OMP notifications processing	96	48	48	48	240
Transaction history	29	14	14	14	72
Settings	158	79	79	79	396
Fiat values	29	14	14	14	72
Landing page	10	19	10	10	48
Total					**3598**

Appendix: additional information

1. Omni Enterprise Milestone 1 POC demo information & recordings

Demo date	Participants	Recording
June 21st, 2022	Omni team and Polkadot Councilor RTTI-5220 (POLKADOT)	n/a
June 24th, 2022	Omni team and Chaos DAO	n/a
June 27th, 2022	Omni team and Edgeware team	link

2. Omni Enterprise Milestone 1 Proposal

3. Omni Enterprise Milestone 1 Report

4. Omni Enterprise SRS & Architecture document

5. Omni Enterprise High-fidelity mockups & prototypes