# Project Rosalind Phase 2 TechSprint Supplementary Information

## What is project Rosalind?

Project Rosalind aims to develop prototypes of an API platform to distribution retail CBDC. It is purely experimental. Based on a two-tier distribution model (a central bank at the foundation of the retail CBDC system and customer-facing activities carried out by the private sector), the objective is to explore how this API could best enable a central bank ledger to interact with payment interface providers (PIPs). It will also explore some of the functionalities required to enable a diverse and innovative set of use cases to be developed by the private sector. Through this experimentation, the project aims to study how best to lay the foundation for building a robust and vibrant ecosystem.

## What's the scope of the project?

The project aims to explore interoperability (between different systems and different forms of money), privacy, FAPI, ISO20022, account-based vs token-based. The project will not explore resilience, performance, cyber security, throughput, efficiency, legal/regulatory/policy, AML or CTF.

## What are the key assumptions?

In Project Rosalind, we assume the following:

- CBDC represents direct claim on the issuing central bank and PIPs do not create new currency in this process.
- PIPs are not limited to banks or financial institutions and they are regulated.
- There are no limits to the quantity of CBDCs issued within the whole CBDC system, allowed for each transaction, and held in each account. CBDCs can be converted one-to-one into commercial bank money and holding CBDCs do not yield any interest.

## Are there any important design decisions participants need to know?

There are several design decisions we made for this experiment. Some of the key ones are included below and more details will be shared with selected teams during the TechSprint:

- Consumers and merchants will have their CBDC user accounts directly with the central bank, and all transactions will be settled in central bank ledger in real-time, on a one-to-one basis and without bundling or netting with other transactions.
- Consumers and merchants' accounts and activities will be managed and facilitated by PIPs. PIPs will be responsible for complying with the relevant AML, KYC and CTF requirements. PIPs will also have to keep records on their users' transaction history as this will not be provided by the Rosalind API.

- Consumers and merchants' personal identifiable information and transaction information will not be visible to the API and the central bank ledger. This information will be stored at the PIP level and encrypted when passing through the API. All activities will go through the API and PIPs could not talk to each other directly.

## What have we developed in Phase 1?

In Project Rosalind, we developed and experimented the following list of APIs and their functionalities.

| Categories | Sub-categories | API end points (RESTful) | Description |
|---|---|---|---|
| Accounts | User account management | OpenAccount | Creates a new parent user account on central bank ledger. Types could be personal and business. |
| | | OpenSubAccount | Creates a new sub-account to a specific parent user account on central bank ledger. Types could be personal and business. |
| | | Disable | Disables a parent or sub-account on central bank ledger. No activities will be allowed on this account. |
| | | Enable | Enables a previously disabled parent or sub-account on central bank ledger. |
| | | Freeze | Freezes a parent or sub-account on central bank ledger. Depositing into this account is allowed, but withdrawal or making payments are not allowed. This can't be triggered by the central bank. Only the end user could do that. |
| | Alias | Alias | Creates an alias on a user account. |
| | | Delete Alias | Deletes (logically) an alias on a user account. |
| | | LookUpAlias | Returns details of an alias on a user account. |
| | Balances | Balances | Returns the total balances of a user account. |
| | | Available balance | Returns the total and usable balances of a user account. |
| Payments | Push payments | Pay | Transfers CBDC from one user account to another. |
| | | SplitPay | Transfers CBDC from one user account to multiple accounts. |
| | Request to Pay | RequestToPay | Requests other user accounts to pay. |
| | | Authenticated RequestToPay | Enables a sending PIP to include an authentication packet so that a user's PIP can automatically approve request (i.e. for POS). |
| | Fund and defund | Fund | Adds CBDC to a user account. |
| | | Defund | Draws down CBDC from a user account. |
| Programmability | Set locks | RequestToLock | Sends requests to add various types of locks on a user account. |
| | | TwoParty | Locks an amount of CBDC in a user account. Decision to release the lock is given to the initiating PIP. |

| | | ThreeParty | Locks an amount of CBDC in a user account. Decision to release the lock is given to a third-party PIP with an appropriate permission. |
|---|---|---|---|
| | | HTLC | Locks an amount of CBDC in a user account using a Hash Time Lock Contract (HTLC). |
| | Cancel locks | CancelLock | Removes the lock previously placed on a user account. |
| | | DrawDownLock | Removes the lock previously placed on a user account either in full or in part, transfers the amount of CBDC previous locked to the intended recipient user account. |
| | Locks information | LockID | Returns active locks placed on a user account. |
| | | LockbyPIP | Returns active locks placed on all user accounts for the requesting PIP. |
| Participants | | Key | Returns public key of the requesting PIP. |
| | | Notification | Pulls notifications via the API. |
| Ecosystem Service Interface Providers | Connectivity | Connect Wallet | Connects a user account to a third-party application or a merchant. |
| | | Disconnect Wallet | Disconnects a wallet from a third-party application or a merchant. |
| | Payment Initiation | Third Party Payment Initiation | Enables a user to link his or her wallet with a third-party application or a merchant, and that the user could authenticate and initiate payments through the PIP. |
| | | Balance | With user consent, enables a third-party application to request a user's balance if the wallet is connected. |
| Offline | Fund and defund | TakeOffline | Draws down CBDC from a user's online wallet and adds the CBDC to the user's offline wallet. |
| | | BringOnline | Draws down CBDC from a user's offline wallet and adds the CBDC to the user's online wallet. |