

# **NATIONAL PAYMENT SWITCH (NPS)**

## **Operating Rules National Payments Interface (NPI)**

**(For Inter-connection & Interoperability of retail transactions)**

**Ver 1.1**

**(Approved by PSD-NRB vide Letter Ref. No. PSD/Policy 04/41/078/79, dated 17<sup>th</sup> Kartik 2078)**

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## Abbreviations and General Definition

### Abbreviations

1. "NRB" refers to Nepal Rastra Bank, the Central Bank of Nepal.
2. "PSD" refers to Payment System Department of Nepal Rastra Bank.
3. "BFIs" refers to Banks and Financial Institutions.
4. "PSP" refers to Payment Service Providers.
5. "PSO" refers to Payment System Operators
6. "NCHL" refers to Nepal Clearing House Ltd., which is licensed by NRB as PSO for operating as a clearing house.
7. "NCHL-IPS" refers to Interbank Payment System operated by NCHL.
8. "NCHL-ECC" refers to Electronic Cheque Clearing System operated by NCHL.
9. "RTGS" refers to Real Time Gross Settlement System operated by NRB.
10. "NPS" refers to National Payment Switch
11. "CIPS" refers to *connect*PS e-payment system operated by NCHL.
12. "RPS" refers to Realtime Retail Payment Switch implemented by NCHL as part of the NPS.
13. "SGF" refers to Settlement Guarantee Fund.
14. "APIs" refers to Application Programming Interfaces.
15. "CBS" refers to Core Banking System.

### Definitions

1. "NCHL-ECC" refers to Electronic Cheque Clearing system for clearing and settlement of paper based instruments.
2. "NCHL-IPS" refers to Interbank Payment system for clearing and settlement of instruction based instruments.
1. "*connect*PS e-Payment System" or "*connect*PS System" refers to faster payment system established by NCHL as a single payments platform to allow the banks' customers for fund transfer and service payments from various channels. As part of National Payment Switch, it has now been disintegrated into real-time Retail Payment Switch (RPS) and the existing channels of the system including mobile App, web application, gateway and APIs. RPS has been scaled up and enhanced to incorporate additional instruments and use cases being part of the National Payment Switch, where as the existing channel will continue to be identified as *connect*PS or *connect*PS System.
3. "Retail Payment Switch" or *connect*PS Switch" or "RPS Switch" refers to the retail-time retail switch, earlier part of the *connect*PS e-Payment System for routing, switching and processing of the financial transactions between the member participants and generates net clearing position for clearing & settlement.
4. "ODFI" refers to Originating Depository Financial Institution which is also referred to as Instructing Institution that originates a financial transaction.
5. "RDFI" refers to Receiving Depository Financial Institution which is also referred to as Instructed Institution that receives a financial transaction.
6. "SGF" refers to Settlement Guarantee Fund created by contribution of member BFIs and NCHL to mitigate the Default Risk and Settlement Risk for NCP settlement of the transactions processed through Retail Payment Switch.
7. "Net Clearing Position" (NCP) or 'Net Settlement Instruction" (NSI) represents the financial position for each member at the closure of each clearing session. The NCP might be net debit or credit, and it is calculated on a multilateral basis.
8. "Account(s)" refers to the bank account(s) held and maintained with the BFIs.
9. "Creditor/Merchant/Service Provider" refers to entity that provides goods or services in exchange of payment through NPI.
10. "Bank" or "BFIs" refers to banks and financial institutions (BFIs) licensed by NRB who can enroll within NPI as Direct Members and are allowed to enroll Customers, acquire Creditors/ Merchants and provide settlement for other members.

11. "Debtor Bank" refers to the BFI in which account is debited.
12. "Creditor Bank" refers to the BFI in which account is credited.
13. "PSP" refers to the Payment Service Provider who can enroll within NPI as Technical Members through member BFIs.
14. "PSO" refers to the Payment System Operator who can enroll within NPI as Technical Members through member BFIs.
15. "On-Us" refers to a payment transaction from one account to another account of the same bank.
16. "Off-Us" refers to a payment transaction from one account to another account of different banks.

## 1. Introduction

### 1.1. Background

As per the mandate of Nepal Rastra Bank “to develop a secure, healthy and efficient system of payments”, it is required to implement national payment and settlement systems in Nepal.

Implementation of nationwide electronic image based cheque clearing (NCHL-ECC) system and interbank payment system (NCHL-IPS), *connectIPS* e-Payment System and Real-Time Gross Settlement (RTGS) were major transition in the payment systems of Nepal. National Payments Interface (NPI) was implemented and in operation as an extended interface of the underlying NCHL-IPS system, *connectIPS* (real-time retail payment system operated by NCHL) and for integrating with BFIs and service providers. And now, in process of extending the payment systems in Nepal and as part of the National Payment Switch - NPS (implementation as per NRB’s approval Ref. No. PSD/11/6/077/78, dated 19<sup>th</sup> Kartik 2077), it was required to scale-up the existing NPI, the system operated by NCHL as a Clearing House, for interoperability of all non-card retail payments including implementing infrastructure of NepalQR, extending overlaying services, introduce debit instrument, PSO settlement and establish it as an open API for extending future use cases of digital payments.

### 1.2. National Payments Interface (NPI)

National Payments Interface (NPI) is a set of standard Application Programming Interfaces (APIs), operated in a hosted model by NCHL, for connecting multiple underlying core systems and services for routing of financial and non-financial messages and for interfacing with the participating members for transfers and service payments. Members can access NPI through a secured communication link directly and use for transaction initiation from the channels provided by NCHL or through any of their own channels. The debtor member shall have at least one of the direct members as its settlement bank and creditors (beneficiary member or service providers/ merchants) shall be owned by the respective members.

The transactions initiated by a member participant will be routed by NPI towards underlying core systems for clearing and settlement of financial transactions and towards beneficiary member or service provider/ merchant for non-financial services. Such transactions shall include all non-card retail payment transactions related use cases, instruments, routing and settlement towards underlying core systems. Interoperability between the members, instruments and services shall also be extended to the participating members.

### 1.3. Objectives of NPI

The objective of NPI as part of the NPS is to establish an open APIs for initiating, processing and routing of non-card digital payment transactions such that it provides mechanism to:

- Achieve a safe and efficient API based channel to integrate multiple underlying core payment systems of direct credit and direct debit instruments.
- Extend underlying core systems and services to the alternate channels of the members to enable interoperability of systems including interoperability of QR between networks, instruments including domestic QR schemes and services.
- Establish as an open channel to accommodate future use cases of non-card retail payments.

### 1.4. Legal and Regulatory Framework

This Operating Rules is established to define the procedure for operation of NPI as part of the National Payment Switch (NPS). The legal authority of the Operating Rules shall be Nepal Rastra Bank Act 2058 BS (2002) as per the provisions of Section 5, Sub Section 1 (i) and the prevailing Payment & Settlement Act 2075 and Payment & Settlement Bylaw 2077. This Operating Rules shall be the regulatory framework that must be followed by all the concerned parties including NCHL and the Members, which shall be effective from the day of its issuance. The approvals and regulations already issued by NRB,

if any, with regards to the extended APIs of the underlying clearing and settlement systems and use cases shall also be valid and binding for all the stakeholders and shall be read as part of this Operating Rules. In order to establish interoperability, mitigate risks and monitoring of retail payment systems in Nepal, NRB may instruct and mandate the licensed BFIs, PSPs and/or PSOs to utilize all or some of the use cases of NPI by issuing directive/circulars as required.

The NPI, as part of the National Payment Switch (NPS), is implemented and operated by Nepal Clearing House (NCHL) as a clearing house, licensed and regulated by NRB as a payment system operator (PSO). Any modification in this Operating Rules shall be amended as per the recommendation of NCHL and upon approval by NRB. The participating members and other relevant stakeholders shall be notified accordingly by NCHL.

## 2. Operating Rules

This Operating Rules is documented to manage the APIs and use cases established or to be established through NPI and its transactions effectively such that a complete business process is understood along with the roles and responsibilities of each member. The purpose of the Operating Rules is to create and document rules, procedures and standards for the operation of NPI.

The Operating Rules shall govern the operations and use of the system. It sets the standards for the followings:

- Roles and responsibilities of the members as participants.
- Roles and responsibilities of NCHL as the operator.
- Detailed operational rules, procedures and other authoritative information to the members and relevant parties as to how the system functions in different business situations.

### 2.1. Core Systems

NPI shall be integrated with the underlying core clearing and settlement systems of NCHL or any other payment systems allowed by NRB through secured network channels for transaction initiation and processing. The service payments shall be available through NPI by extending services of the members or by integrating service providers within NPI, such that all such services shall be available to other members. The transactions initiated by the member participants will be routed by NPI towards such underlying core systems for clearing and settlement for financial transactions and towards members or service providers for services. Hence, the operating rules or operating procedures or any other guidelines of such core system will also apply for the financial transactions.

### 2.2. Threshold

Threshold of transactions initiated and routed through NPI shall be applied in the system to define maximum amount of payment transaction that can be processed. This will be applied as per the thresholds of the underlying core system. The thresholds shall be defined and validated automatically by NPI and/or the underlying core system as follows.

- Participant Threshold: This is the total number messages allowed for each member participant to initiate in a defined frequency. Such threshold shall be used to control the flow of messages in the system.
- Transaction Threshold: This is the per transaction limit allowed for processing through NPI by the members, which shall be as follows or as mentioned by NRB for specific cases. This shall be amended as per the prevailing NRB directive.



Transaction Thresholds	On-Us Transaction	Off-Us Transaction
Non-Real Time Transaction	-	As per NCHL-IPS
Real Time Transaction	As per Retail Payment Switch	As per Retail Payment Switch
Gross Settlement Transaction	-	As per RTGS

- Channel Specific Threshold: This is the transaction limit of the channels or instruments integrated with NPI and extended to customers of the members. Such threshold shall be set by the respective members or the operator as per their internal policy. It shall be less than or equal to the transaction threshold of NPI and as per the limits specified by NRB for such channels or instruments.
- Use Case Specific Transaction Threshold: This is the transaction limit for specific use cases established through NPI. It shall be for such specific use cases and shall be published by NCHL when such use cases are rolled out and shall be based on whether it is real-time or non-real time, debit or credit instrument. However, it shall in all cases be less than or equal to Transaction Threshold and Channel Specific Threshold.

### 2.3. Response Mode

The messages sent to NPI and its acknowledgments shall be immediate. However, the transaction or service completion and corresponding status responses shall be as per the rules of the underlying systems or as responded by such service providers. Settlement of such transactions shall also be as per the rules of underlying systems. Specific use case requiring settlement time schedule shall be published by NCHL based on the rules of the underlying system and with consideration of the participating BFIs for approval and funding arrangements.

## 3. Participant Management

### 3.1. Participant Membership

Direct membership of NPI shall be open to all Banks and Financial Institutions (BFIs) operating in Nepal or any other entity at the discretion of NRB. Indirect and Technical membership shall be open to non-bank financial institutions and large institutions or corporates that are allowed to originate specific purpose based transactions.

#### 3.1.1. Direct Member

Direct members shall be banks and financial institutions licensed by Nepal Rastra Bank and operating within Nepal and having direct membership of the underlying core systems, such that they hold settlement account at NRB to settle in RTGS for the financial obligations to other BFI's. They shall have a direct communication link and fully integrated with NPI enabling the member to exchange financial and non-financial messages with other members. The transaction initiation may be from any of the channels of provided by NCHL or other alternate channels of the member. The services acquired by Direct Members or services of Indirect/ Technical members of which the Direct Member is a settlement bank shall also be extended within NPI for service interoperability, such that other members can send service or payment details to such member.

#### 3.1.2. Indirect Member

Indirect members shall be non-bank financial institutions that have a direct communication link and fully integrated with NPI enabling the member to exchange financial and non-financial messages with other members but do not have settlement account at NRB to settle the financial obligations. Therefore, they need to settle their positions through a Direct Member as settlement bank that has an account at NRB. The services of Indirect Members shall also be extended within NPI for service interoperability, such that other members can send service or payment details to such Indirect Member.

### 3.1.3. Technical Member

Technical Members shall be payment service providers or payment system operators licensed by Nepal Rastra Bank that are allowed to process transactions of their own or on the behalf of their customers. It shall also include Government of Nepal entities, large institutions or corporations that have their own large number of payments and fund transfer transactions or any other entity as prescribed by NRB. Technical Members shall have direct communication link and fully integrated with NPI but do not have settlement account at NRB to settle the financial obligations. Therefore, they need to settle their positions through a Direct Member as a settlement bank that has an account at NRB. The services of Technical Members shall also be extended within NPI for service interoperability, such that other members can send service or payment details to such Technical Member.

### 3.1.4. Third Party Integrator

Third Party Integrator shall be an intermediary who provides systems or integrations to Direct or Indirect or Technical members. Third party Integrator shall have direct communication link and fully integrated with NPI for and on the behalf of Direct or Indirect or Technical Member. It will only integrate issuing or acquiring systems or channels or back-office systems to channelize the transactions through NPI. There will be no financial transactions or any positions created for such members. Therefore, they need to be sponsored by one of the Direct or Indirect or Technical Member

All responsibilities and liabilities of transactions initiated from such Third Party Integrator shall be of the sponsoring member and shall ensure compliance by such integrator, as may be prescribed by NRB.

## 3.2. Participant Prerequisites

Following shall be the eligibility criteria and prerequisites for Direct Member.

1. Shall be licensed as bank and financial institution in Nepal.
2. Shall hold an account in NRB or RTGS for settlement.
3. Shall be a member of at least one of the underlying systems of NCHL and complying with terms of the Operating Rules of such underlying systems.
4. Shall have a direct secured communication link with NCHL and fully integrated with NPI enabling the member to exchange messages.
5. Shall allow to extend its acquired services and receive payments through NPI for other members.
6. Shall maintain uninterrupted and secured host-to-host connectivity with isolated underlying ISO 8583 or ISO 20022 or similar protocol as specified.
7. Shall agree to comply with the terms of this Operating Rules and any other criteria and/or conditions as may be prescribed by NRB and/or NCHL.
8. Shall be able to cover its liabilities and to pay its debts once they fall due, and not be insolvent as defined in accordance with any Insolvency Act applicable to the member.
9. Shall pay the applicable fees and charges to NCHL.

The existing banks and financial institutions who have already entered into membership agreement for participation in the NPI for integration, prior to the issuance of this Operating Rules, will continue as its Direct Members.

Following shall be the eligibility criteria and prerequisites for Indirect and Technical Member.

1. Shall be a legal entity registered under Nepal Law or licensed institutions in Nepal jurisdiction.
2. Is allowed to originate specific purpose transactions either for itself or on the behalf of its customers.
3. Shall have established a legal agreement with one of the Direct Members, who holds an account in NRB, to act as its settlement bank for processing of the transactions and settling the Net Clearing Position (NCP).
4. Arrange with its participating BFIs to debit/credit RTGS settlement account through NCHL for multi-lateral net settlement.

5. Shall have a direct secured communication link with NCHL and fully integrated with NPI enabling the member to exchange messages.
6. Shall allow to extend its acquired services and receive payments through NPI for other members.
7. Shall agree to comply with the terms of this Operating Rules and any other criteria and/or conditions as may be prescribed by NRB and/or NCHL.
8. Shall be able to cover its liabilities and to pay its debts once they fall due, and not be insolvent as defined in accordance with any Insolvency Act applicable to the member.
9. Shall pay the applicable fees and charges to NCHL and its Settlement bank, if any.

Indirect and Technical Members shall be allowed for specific purpose based transactions only. The existing PSPs, PSOs, non-bank financial institutions, Government/ Semi Government entities, large institutions and similar, which have already entered into membership agreement and onboarded in NPI for integration, prior to the issuance of this Operating Rules, shall continue as its Indirect or Technical Members.

All the members shall maintain security standards for integrating with NPI and for daily operations to minimize any potential risk. NCHL or NRB may recommend or certify such standards for NPI members.

### 3.3. Participant Agreement

1. Each member shall sign a membership agreement or amend the main agreement with NCHL to subscribe NPI.
2. Indirect and Technical members shall also have an agreement or arrangement with existing Direct Member(s) for using NPI and for settlement purpose, which shall be included as part of the Indirect or Technical member agreement. A debit and/or credit authority of such settlement account shall also be provided to NCHL through settlement bank.
3. Third Party Integrator shall also have an agreement or arrangement with existing Direct or Indirect or Technical Member(s) for integrating NPI on the behalf of such members, which shall be included as part of the Third Party Integrator agreement.
4. NCHL shall notify to all other concerned participants when new member is enrolled in the system.

### 3.4. Participant Suspension

A participant shall be suspended for the following reasons but shall not be limited to:

1. License revoked or declared as problematic by NRB or by any other statutory body.
2. Participant declared itself as insolvent or declared insolvent pursuant to prevailing Insolvency Act.
3. Fails to comply with the terms of this Operating Rules and/or the Operating Rules/ Procedures of the underlying core systems.
4. Fails to comply with the terms of the membership agreement.

The suspension shall be immediately effective after being identified by NCHL or being informed to NCHL or as directed by NRB. The participant shall not be able to exchange and process any transaction further. However, the transactions already initiated by a suspended participant, as debtor participant, shall be deemed as accepted. Therefore, the suspended participant shall continue to be liable to NCHL and other participants in respect of all its outstanding obligations and liabilities.

### 3.5. Participant Resumption

Resumption of a suspended participant in NPI may happen in case that the reason for suspension has been rectified to the satisfaction of NCHL or as prescribed by NRB.

### 3.6. Participant Termination

Termination of a participant shall be accomplished when decision for permanent removal is made. The membership of a participant shall be terminated in NPI in case the participant satisfies one of the following conditions.

1. Fails to comply with the terms of this Operating Rules.
2. Terminated as per the Operating Rules or Procedures of the underlying core system.
3. License revoked by NRB or by any other statutory body authorized to do so.
4. Declared insolvent or participant declared insolvency or similar, or
5. Withdrawal requested by the participant.

Termination of a participant is permanent, where terminated participant will no longer be accessible to NPI, although the participant information will remain for future reference. Once terminated, re-processing shall be necessary for participation.

### 3.7. Participant Withdrawal

Any participant who would like to withdraw from NPI, as per its business decision, must send an official request ninety (90) days in advance. Once withdrawn, re-processing shall be required for participation.

### 3.8. Participant Identification

Each participant shall be represented on NPI with a unique identification member number (Id), provided by NCHL. However, for existing members of NCHL, identification number of NCHL-ECC, NCHL-IPS and *connectIPS* will be re-utilized for NPI.

### 3.9. Participant Notification

Upon receipt of an official communication and a member added or suspended or terminated or withdrawn or resumed, NCHL shall notify to all other participants via electronic means.

## 4. System Architecture

National Payments Interface (NPI) is a set of standard Application Programming Interfaces (APIs), operated in a hosted model by NCHL, for connecting multiple underlying core systems and services for routing of financial and non-financial messages and for interfacing with the participating members for transfers and service payments. Members can access NPI through a secured communication link directly and use for transaction initiation from the channels provided by NCHL or through any of their own channels. The debtor member shall have at least one of the direct members as its settlement bank and creditors (beneficiary member or service providers/ merchants) shall be owned by the respective members.

The transactions initiated by a member participant will be routed by NPI towards underlying core systems for clearing and settlement of financial transactions and towards beneficiary member or service provider/ merchant for non-financial services. Such transactions shall include all non-card retail payment transactions related use cases, instruments, routing and settlement towards underlying core systems. Interoperability between the members, instruments and services shall also be extended to the participating members.

### 4.1. NPI Components

NPI has, but not limited to, the following system components, which are exposed through APIs for interconnection with the relevant entities of underlying core systems or members or service providers.

#### 4.1.1. Validation Layer

These APIs are related to validation of beneficiary details and/or service information prior to initiating such transaction or payment. This allows to extract and/or validate beneficiary bank account; reverse mapping of bank account with virtual payment address and similar.

#### 4.1.2. Routing Layer

These APIs are consumed by the participating member to initiate a transaction, which will be routed towards underlying core system and/or service payment layer to enable systems interoperability. It is also responsible for authentication, system and business validations for each transaction.

#### 4.1.3. Service Payment Layer

These APIs are related to the overlaying service payments extended by the members or service providers within NPI, which can be used by any of the participating member to initiate such service payments to enable service interoperability. It is responsible for system and business validations of specific services. Service components is integrated with service provider or members for extracting or updating service details.

#### 4.1.4. Request To Pay Engine

These APIs are related to initiation and approving of payee (creditor) initiated uses cases (direct debit instrument), which can be event based with each request being approved by payer (debtor) or as one-time standing instruction created as e-mandate. It handles tokenization of debit requests and routing of such requests and responses. The payee agent and payer agent will be the members (BFIs, PSPs or service providers) and their customers as payee and payer, which will enable interoperability of debit instruction.

#### 4.1.5. QR Switching

These APIs are related to issuing and acquiring of NCHL's QR scheme and for inter-network transaction and settlement of other NepalQR schemes operated by other PSOs. The necessary APIs shall be available within NPI, whereas a separate Operating Rules shall be established for its operations.

#### 4.1.6. Net Settlement Layer

These APIs are related to net settlement of member PSOs or any specific member entities, such that a settlement file transmitted by such member are converted into net settlement instruction (NSI) and routed and settled in RTGS system at specified time and upon approval of the participating BFIs of such PSOs or specific member. The number of settlements will be based on the RTGS System Rules and arrangement with the BFIs for transaction approval.

#### 4.1.7. Reporting Layer

These APIs are related to reporting and reconciliation of transactions processed through NPI and use by the members to extract status of the transactions, settlement and services.

### 4.2. NPI Related Entites

NPI shall have connection with all or some of the following entities, depending on the type of use case or instrument or member.

#### 4.2.1. Underlying Core Systems

These are the core payment systems through which the transactions are processed, cleared and settled. Underlying core systems could be owned and operated by NCHL or by any other entity but integrated through NPI.

#### 4.2.2. Banks and Financial Institutions

BFIs act as Direct Member of NPI or settlement back of Indirect/ Technical Member or Issuer/ Acquirer of their customers/ creditors or sponsor of Third Party Integrator.

#### 4.2.3. Other Members

Other Members act as Issuer and/or Acquirer of their customers, creditors/merchants or sponsor of Third Party Integrator or service provider.

#### 4.2.4. Payment Channel

This includes channel platforms provided by NCHL or channels of the members that are used for initiating transactions by end customers of the members or members. The payment channels are integrated with NPI for initiating transactions to the underlying payment systems.

#### 4.2.5. Creditors or Service Providers

They are the creditors or merchants acquired by the members for any of the system or instrument or use case.

#### 4.2.6. Third Party Integrators

They are the intermediaries who provide systems or integrations to Direct or Indirect or Technical members for connecting with NPI for and on the behalf of such members.

### 4.3. NPI Technical Specifications

NCHL shall publish a technical API specification document of NPI that will define a detailed technical aspects of the APIs including necessary pre-requisites for interconnection and security.

## 5. System Operation

### 5.1. Daily Operation

NCHL shall operate and manage the daily operations of NPI by:

1. Configuring required setups and limits for the participants.
2. Monitoring of the NPI components and messages presented and/or replied.
3. Monitoring and overall management of the transaction life cycle and taking corrective actions and/or decisions appropriately.
4. Provide necessary support to the participating members.

### 5.2. Transaction Workflow

#### 5.2.1. General Workflow

Following shall be a high level general workflow of NPI.

1. System shall authenticate the member prior to receiving and/ or processing a message based on multi-layer security controls.
2. Processes and validates received message against system and business validations.
3. Records the message information for audit trail.
4. For credit transfers/ payments and debit account validated, transmits the transaction to debtor bank for account debit. Debit leg will be by-passed if the use case so requires.
5. For debit instrument, payee response will be validated and transmitted to the payer agent (debtor bank).
6. In case of service payment that is integrated within NPI, a message will also be sent to service provider along with the necessary identifier and based on the response from the service provider credit leg will be triggered.
7. Transmits transaction, upon confirmation of debit leg to the underlying core system for account credit to creditor bank based on account number or identifiable virtual payment address. The underlying core system may respond the credit on immediate basis or on deferred basis.

8. Transmits received replies to debtor bank for either acceptance or rejection. In case of service payment, the response is also provided to the service provider.
9. Pushes or allows the members to pull reports and reconciliation information based on the status of the transaction in the underlying payment system.

Detailed process flow indicating technical API specifications, necessary controls of specific use cases and/or instruments established through NPI shall be published separately as guidelines by NCHL.

### 5.2.2. Real-Time and Non Real-Time Transaction

Member will use APIs to initiate real-time or non-real time transactions, corresponding to which they are processed through underlying real-time system (eg. *connectPS*, etc.) and non-real time system (eg. NCHL-IPS, etc.). Such underlying system could be operated by NCHL or any other entity. A general transaction flow will be as follows, subject to modification required for various use cases.

1. A transaction will be initiated from an originating member, who will use real-time APIs for initiating real-time transactions and use non-real time APIs for initiating non-real time transactions. The member may also use validation APIs to verify beneficiary account details and/or service information.
2. NPI will then authenticate the originating member prior to receiving and/or processing the message. Such authentication mechanism will be as prescribed in NPI technical specification document.
3. Prerequisite for processing real time transaction is that both debtor and creditor banks must be members of underlying real time payment system. Whereas, in case of non-real time transactions, the debtor bank must be a member of underlying real time payment system and the creditor bank must be a member of underlying non-real time payment system.
4. NPI will route the transaction to debtor bank to debit the originator's or its customer account.
5. Upon confirmation of debit leg, the transaction will be routed to the underlying payment system for credit to beneficiary through creditor bank based on beneficiary account or identifier or virtual payment address.
6. The underlying payment system in case of real time transactions shall credit on immediate basis or consolidated deferred basis, whereas in case of non-real time transaction credit will be on deferred after the confirmation of final settlement of the underlying non-real time payment system. Settlement of the transactions shall be processed as per the operating rules/ procedures of the respective underlying system.
7. NPI transmits received replies from creditor bank and service provider for service payment to debtor bank for either acceptance or rejection. In case of service payment, the response is also provided to the service provider.

### 5.2.3. Interoperability

Transactions between the members or any use case established with such arrangement will be considered as member interoperability. Such transaction may be between direct members or indirect/ technical members or combination. Creditors/merchants enrolled or acquired by any of the members will be extended in NPI as aggregated service APIs, which will be available to other members to originate service payment from such member or any of their channels as service interoperability.

A general transaction flow for some of member and service interoperability are as follows, whereas members and/or NCHL may establish any use cases based on such interoperability.

#### 5.2.3.1. Member Interoperability

This is an arrangement to establish interoperability between the members such that the transactions or use cases related to account to account, account to wallet, wallet to account or wallet to wallet that are initiated by end customer of the members or member as a service provider can be established.

1. Prerequisite for members' interoperability is that the originating member (settlement bank in case of indirect/ technical member) must be a member of underlying real time payment system, whereas,

receiving member or its settlement bank must be a member of underlying real time or non-real time payment system.

2. A financial or non-financial message will be initiated from an originating member or its channel to any other receiving members. Such originating or receiving member could be direct or indirect or technical member within NPI or any of the underlying systems.
3. Such message will at least consist of the details of the receiving member and its beneficiary. Such identifier will be bank account or unique code or virtual payment address or similar that uniquely identifies the beneficiary at receiving member.
4. NPI will then authenticate the originating member prior to receiving and/or processing the message. Such authentication mechanism will be as prescribed in NPI technical specification document.
5. NPI will debit the originating members account, unless for case of Debit Not Required in which originating member will handle the debit leg, and then route the transaction based on the beneficiary details (account number or virtual payment address) for credit through underlying system to beneficiary. In case originating or recipient member is indirect or technical member, such account will be its settlement account and based on credit confirmation the receiving member will process or inform its beneficiary.
6. The underlying transaction between members or their settlement banks (in case of indirect/ technical members) will be settled as per the operating procedures or rules of the respective underlying system.
7. Members and/or NCHL may establish any of the use cases based on such member interoperability.

#### **5.2.3.2. Service Interoperability**

This is an arrangement to establish interoperability for service payments, such that the services enrolled within the system are available or extended to all other members and their customers. Such service payment details will be available to the members as aggregated service APIs or Biller Gateway to be consumed in their system or channel.

1. Prerequisite for service interoperability is that the services enrolled or acquired by the members are extended within NPI. Also originating member (settlement bank in case of indirect/ technical member) must be a member of underlying real time payment system, whereas, receiving member or its settlement bank must be a member of underlying real time or non-real time payment system.
2. A financial or non-financial message will be initiated from an originating member or its channel to use a service available within NPI. Such originating member could be a direct or indirect or technical member within NPI or any of the underlying systems.
3. Such message will at least consist of details of receiving service and beneficiary details. However, the service may or may not be directly integrated within NPI.
4. NPI will then authenticate the originating member prior to receiving and/or processing the message. Such authentication mechanism will be as prescribed in NPI technical specification document.
5. NPI will debit the originating members account, unless for case of Debit Not Required in which originating member will handle the debit leg, and then route the transaction to the creditor bank through underlying system to credit the service provider. In case, the recipient member is indirect or technical member, such account will be its settlement account and upon credit confirmation, the receiving member will process or inform the beneficiary.
6. If credit transaction is successful, the service details will be transmitted to the service provider.
7. The underlying transaction between members or their settlement banks (in case of indirect/ technical members) will be settled as per the operating procedures or rules of the respective underlying system.
8. Members and/or NCHL may establish any of the use cases based on such service interoperability.

#### **5.2.4. Government of Nepal Payment Interoperability**

This is an arrangement for processing and interoperability of the Government of Nepal (GoN) payment transactions, including revenue collection and expense payouts, corresponding to which consolidated APIs are exposed for initiation, processing and interoperability from any of the members and their



channels, subject to compliance of prevailing directive or procedure for such GoN transactions. NPI is integrated with Revenue Management Information System (RMIS) for revenue collection and with Electronic Fund Transfer (EFT) system of GoN, both hosted at Financial Comptroller General Office (FCGO) for processing of the financial and non-financial transactions, whereas, the APIs within NPI are exposed and extended to the payment channels (NCHL's own channels and channels of the members), such that the financial transactions are cleared and settled through one of the underlying core systems.

An arrangement and workflow of GoN collection and expense transactions are as follows:

#### 5.2.4.1. GoN Collection Transactions

1. The designated settlement bank accounts of GoN will be enrolled in the underlying payment system as revenue collecting bank, where revenue payments will be credited.
2. The APIs of the payment processor (gateway) of the underlying payment system will be provided to FCGO or its authorized GoN entities for integration with its system or web portal(s) to enable revenue collection from such web portals. Other entities of GoN will also access the same gateway for revenue collection.
3. For GoN revenue payments based on Voucher Number, the necessary APIs available in NPI will be extended to all the available channels of NCHL and its members, such that the revenue payments can be initiated from any of such channels including platforms of *connectIPS*, Bank Central Module at bank branches, alternate channels of member BFIs and that of technical/ indirect members.
4. The transactions initiated from the channels will be routed to NPI for necessary validation based on which NCHL routes credit transaction to the revenue collecting bank.
5. Upon realization of the payment at the designated revenue collecting bank, it will update the GoN system against the Voucher number.

#### 5.2.4.2. GoN Expense Transactions

1. The designated bank accounts of GoN will be enrolled and white listed in the underlying payment system as expense bank account, where the payments will be debited.
2. FCGO will have access to APIs through NPI hosted at NCHL to process its expense related transactions initiated from its internal system(s) and to receive responses of such transactions. It may also extend such APIs to the systems of other GoN entities, corresponding to which the necessary integration and maintenance will be handled by them.
3. Based on FCGO's expense instruction, its designated settlement bank shall debit FCGO's account or record based on the bank's arrangement and forward the transactions through NPI.
4. NPI will process the debit transactions in the underlying payment system including further credit to the beneficiary account(s). Such beneficiary account could be bank account or stored value instrument of the members.

#### 5.2.5. Request To Pay (R2P)

This is a pull type payment instrument, such that NPI will be enabled for such Request to Pay (R2P) instruction as request and process between the members. Such R2P instruction can be one-time Event based or scheduled E-mandate based. The ultimate Payee and Payer could be a member or its customer, with request being originated from any of the channels. The members (direct or indirect/ technical) will be Payee Agent and Payer Agent for their customers as Payee and Payer.

Being debit instruction, the maximum transaction limit of R2P will be up to the mobile banking limit specified by NRB. However, the members shall ensure that their channel specific limits are adhered with if its is less than the maximum limit specified for R2P.

A general transaction flow for R2P shall be as follows, whereas members and/or NCHL may establish any specific use cases based on R2P.

### 5.2.5.1. Event Based R2P

This is related to an event based R2P that can be initiated as one-time pull transaction, corresponding to which a debit request (from Payee) will be initiated and upon Payers confirmation, a credit transfer from Payer to Payee will be initiated.

1. Pre-requisite for initiating R2P request is that the Payee Agent will have to enable R2P non-financial transaction for initiating such request through NPI from its channel/instrument and the Payer Agent will have to enable R2P for receiving such request through NPI in its channel/instrument and for Payer authorization.
2. An event based non-financial R2P request message will be initiated by a Payee (creditor) from its channel/instrument provided by Payee Agent.
3. NPI will authenticate the Payee Agent (as member), validate the request prior to routing of the message to Payer Agent.
4. NPI will route the R2P request message to Payer Agent, who will notify or inform the Payer (debtor) in its channel/instrument or alternate mechanism.
5. The payer will verify the R2P request and then authorize for either accepting or rejecting the request as an event based request confirmation within a stipulated timeline, after which the request will be expired.
6. For accepted R2P request, a credit transfer will be initiated from Payer Agent through underlying real-time payment system and integrated with NPI. The authorization and authentication of Payer and compliance to transaction limit will be the responsibility of the Payer Agent and its channel.
7. The payment transaction status will then be transmitted to Payee Agent and Payee.
8. Members and/or NCHL may establish any of the use cases based on such event based R2P instrument.

### 5.2.5.2. E-Mandate Based R2P

This is related to an E-Mandate based R2P that can be initiated as a pre-authorized debit request by Payer, corresponding to which successive transfers from Payer to Payee will be initiated on scheduled time or as and when required. Such e-Mandate will be setup and authorized by Payer as one-time activity.

1. E-Mandate is a tokenized digital consent authorized by Payer (debtor) allowing a Payee (creditor/beneficiary) to receive an amount from the specified Payer's debit account at predefined schedule or on request as set in the e-Mandate.
2. Pre-requisite for initiating and processing R2P is that the Payee Agent will have to enable e-Mandate based R2P in its channel/ instrument, which will be integrated with e-Mandate Tokenization Gateway to obtain tokenized e-Mandate. E-Mandate is mandatory for initiating and processing direct debit transactions.
3. Payer will setup and authorize one-time e-Mandate through a channel provided by its Payer Agent (which could be indirect/ technical member or service provider). Such one-time e-Mandate will capture information including, but not limited to, Payee details, Payee Agent, Payer Agent, Payer Identifier, Purpose, Frequency, Starting Date, Expiry Date, Amount (fixed or limit).
4. Following will be the process for creating a tokenized e-Mandate.
  - a. Payer Agent will have to customize its channel to capture necessary payment information and then redirect towards e-Mandate flow.
  - b. Payer customer will be provided with an option to initiate debit instruction on a scheduled time. The Payer customer will then be redirected to the tokenization gateway of NCHL.
  - c. Such Payer customer will be authenticated from gateway of *connectIPS* based on its credentials or based on the issuing instrument of the participating member or arrangement provided by such member.
  - d. The Payer will verify the details and then complete the authentication and authorization in the tokenization gateway. The Payer customer will then select one of its linked account for the account setup in the mandate. The linked account in the mandate will be used in all future direct debit requests from Payee.

- e. Payer customer will also have an option to link its bank account from a member bank enrolled in tokenization R2P platform with NCHL, corresponding to which such customer need not have *connectIPS* login. The customer will go through a standard two-step process of validation of OTP and micro-deposit or similar arrangement to link its account with e-Mandate. The linked account in the mandate will be used in future direct debit requests from Payee.
  - f. Upon Payer's confirmation and successful authentication, a unique token is generated for each e-Mandate and provided to Payer Agent through a secured network, which will be used in future direct debit requests from Payee or Payee Agent.
5. On due date or upon request based on e-Mandate, the Payee or Payee Agent will initiate a R2P request (debit instruction) based on the authorized mandate details, corresponding to which the details of the e-Mandate token, financial message token, debit amount, payee details and other payment information will be sent along with the request.
  6. NPI will authenticate the Payee Agent (as member) and then validate the request details prior to routing of the message to Payer Agent, who will notify or inform the Payer (debtor).
  7. Based on nature of transaction or channel used or transaction amount, Payer Agent may add controls for additional authentication (like OTP or authenticator based code or similar) that may be required to complete the financial transaction. Such OTP generation as additional control will be the responsibility of the Payer Agent.
  8. The transaction status will then be transmitted to Payee Agent and Payee.
  9. NCHL will setup a maximum validity period of an e-Mandate after which the mandate may be automatically terminated or a new e-Mandate will have to be created, if required.
  10. The Payer and Payee will also have access to Cancel its e-Mandate, whereby Payer will have such access through *connectIPS* channel (if it is a user of *connectIPS*) or through its BFIs using Bank Central Module provided by NCHL; or the respective alternate channels of the members. Payer Agent or Payee Agent will have such access to Cancel e-Mandate through APIs.
  11. Members and/or NCHL may establish any of the use cases based on such e-Mandate based R2P instrument.

#### 5.2.6. Net Settlement

This is an arrangement for processing of final settlements for PSO or other institutions through NCHL towards RTGS. Such PSO or other institutions will use APIs to initiate their multilateral net settlement of their member BFIs against the transactions processed in their system and settlement processed through NCHL.

A general transaction flow shall be as follows, subject to modification as per the use case and RTGS System Rules.

1. PSO or institutions, for which net settlement has to be processed, will be a technical or indirect member of NCHL. Prerequisite for processing net settlement is that the participant BFIs of the member shall also be the members of the underlying core system and RTGS.
2. The member shall also provide necessary debit and/or credit authorization from individual participating BFIs in favor of NCHL to settle their positions at RTGS.
3. Member will send a settlement message through NPI in a specified session, which will then authenticate the originating member prior to receiving and/or processing the message. Such authentication mechanism will be as prescribed in NPI technical specification document.
4. NPI will route the message to Net Settlement layer of the system for recording, necessary business validations and conversion to net settlement instruction (NSI).
5. The NSI will then transmit the transaction details to each of the participating BFIs, included in the file, to verify and confirm the transaction using Bank Central Module provided by NCHL. For net debit position, the BFI will debit the member's account, corresponding to which necessary controls will be established by debiting member.
6. NSI will be processed on 'All or None' basis and at specified time schedule, such that the NSI will be sent to RTGS only after the transactions are approved by the respective BFIs. If a transaction

is rejected by any of the BFIs, then the NSI file will be returned as rejected to the member, corresponding to which it will have to resend the file again for necessary approval and processing, after resolving the reason for rejection.

7. Based on RTGS response, the status of the respective transactions will be updated and also a response of NSI will be updated to be pulled by the member.
8. Necessary arrangement will be made and authorization provided to NCHL by such PSO or institutions from its member BFIs for settlement arrangement and to mitigate the credit or settlement risk of its system. It shall ensure that its member BFI's accounts at RTGS are properly funded. NCHL shall not guarantee the settlement and shall not have any liability of non-settlement.
9. The specified session details for net settlement message processing shall be as per the following schedule.

Session Type	NSI Exchange Period		Reply Period		Pre-Settlement	NSI Settlement	Business Day
	Start	End	Start	End			
Session 0	14:00 (T-1)	10:30 (T)	10:30 (T)	11:30 (T)	11:45	12:00	Sunday-Friday (NPR)
Session 1	10:30 (T)	12:30 (T)	12:30 (T)	13:30 (T)	13:45	14:00	Sunday-Thursday (NPR)

**5.2.7. Domestic and Inter-network QR Payment**

This is an arrangement for processing of NEPALPAY QR as an implementing infrastructure of NepalQR, corresponding to which all the APIs required for Issuer, Acquirer and Other Networks will be provided through NPI.

1. NPI will be enabled for processing of NEPALPAY QR domestic scheme owned by NCHL and for inter-network QR transaction and settlement of other QR schemes as per NepalQR.
2. The member BFIs, PSPs or their channels will be onboarded as Issuer that will initiate QR payment. The member BFIs, PSPs or their merchant acquiring channels/systems will be onboarded as Acquirer to acquire QR based merchants/creditors that will be available to all Acquirer within the NPI network.
3. Acquirer will be allowed to implement its own acquiring or merchant management system for NEPALPAY QR. However, for the members not having its own acquiring engine, NCHL Bank Central Module can be used for QR merchant acquiring and QR code generation.
4. For inter-network QR transaction and settlement, such PSO will be enrolled within NPI as a technical member.
5. NEPALPAY QR and internetwork QR transaction shall be guided by separate QR Operating Rules, however access to the QR switching will be through NPI.

A general transaction flow of QR shall be as follows, subject to modification as per use case.

1. A customer can initiate a transaction through channel provided by its issuer, which is integrated with NPI.
2. The message will be sent by the Issuer to NPI, which will perform technical and business validation, which will then transmit a message to QR engine which will identify the parties in the payment chain to initiate an instruction.
3. The QR engine will send the request to NPI for debit leg of the transaction which will be processed on real-time basis through underlying payment system, except for the case of 'Debit Not Required' in which the Issuing member will process and hence the customer credit. The credit leg to the Acquirer will be done on deferred basis, except in specific merchant categories.
4. In case of PSPs or aggregators being Issuers or Acquirer, the settlement accounts of such entities maintained with a settlement BFIs will be debited or credited. However, if BFI is an issuer, the account of the customer/initiator will be debited, unless for the case of 'Debit Not Required'.

5. Deferred credit will be on acquirer's account at specified schedule, who will further credit the creditor/merchant account, except for specific merchant categories where direct merchant account will be credited.
6. Acquirer credit will be processed through one of the underlying systems (non-real time or real-time system) with final settlement between the BFIs as settlement of such underlying system.
7. Issuer and Acquirer will use reporting APIs in NPI to extract the status of its transaction, settlement and fees details.
8. Acquirers will have option to process their merchant settlement through underlying payment system in NPI, for further credit to creditor/merchants on net basis or have its own arrangement.
9. NEPALPAY QR transaction process including fees details shall be guided by separate QR Operating Rules and membership agreement.

A general transaction flow of inter-network transaction and settlement shall be as follows, subject to modification as per the use cases.

1. If one of both, Issuer or Acquirer are in different QR networks, then such QR payment will be considered as inter-network transaction and will be initiated from NPI and processed through NEPALPAY QR. If one of the networks is NEPALPAY QR, then it will be processed as its own transaction.
2. All such QRs shall be as per NepalQR standard and shall be identified by tags prescribed by NRB.
3. For inter-network QR payment, the Issuer network will send QR details to NPI, which will route the information to Acquirer network.
4. Response received from the Acquirer network will be routed to the Issuer network through NPI.
5. Respective networks will further transmit the information and response to their Issuer and Acquirer.
6. Inter-network settlement will be done between the settlement banks of Issuer network and Acquirer network based on the NSI generated by NPI through one of its underlying payment systems.
7. Inter-network transaction and settlement process including fees details shall be guided by separate QR Operating Rules and membership agreement.

#### 5.2.8. Other Use Cases

NPI shall be establish as an open channel to accommodate future use cases and service extensions related to non-card retail payments and their interoperability. The members and/or NCHL may establish any additional instrument or use cases based on NPI, corresponding to which for new instruments, necessary approvals from NRB will be additionally obtained.

APIs of NPI can also be opened to extend integration with international or regional payment networks for initiating, processing, clearing and settlement of non-card based cross border payment transactions. However, for any such extension for cross border transactions separate approvals will also be obtained from NRB prior to its rollout.

#### 5.3. Exception Handling

A transaction processed through NPI either on credit or debit may fail or services not updated after the transaction success, due to various reasons such as loss of network connectivity, failure of system of BFIs or members or service provider, failure of integration middleware, incorrect beneficiary details or other business reasons. Such cases of transaction failure and process for exception handling of payment transactions shall be as per the Operating Rules of the underlying core systems, whereas for failure in services shall be through the creditor (acquiring) member. The members shall ensure that the necessary arrangements are in place while acquiring such service providers.

In order to streamline the exception handling, including procedure for dispute handling, NCHL may issue a separate dispute handling procedure, as may be required. NCHL may implement Dispute Management System to automate and enforce the dispute handling procedure.

## 5.4. System Validations

The routing layer of NPI shall perform validation of every message against pre-defined validation rules/ setups prior to routing toward underlying core system or member or service provider. Such validations shall include, but are not limited to, the followings:

- API Specification: Technical validation of the message against API specification of NPI.
- Non-Duplication: Check against non-duplication of a transaction.
- Thresholds: Ensure that the threshold limit does not exceed Participant Threshold, Transaction Threshold, Channel Specific Threshold, Use Case Specific Threshold.
- Member Status: Participants of the transactions are not suspended or at default.
- Payment Types: The sender participant is allowed to send the direct credit or debit message and the receiver participant is allowed to receive such message type.
- Transaction Currency: Payment instruction currency is one of the supported currencies.
- Session Status: There is an open clearing session for the presented message type, according to the provided currency, settlement date and purpose code in the underlying core system.

## 6. Settlement Management

### 6.1. Settlement Sessions and Schedules

1. Settlement sessions shall be as per the sessions and schedules of the underlying core systems.
2. Use cases requiring NSI settlement at RTGS shall be as per the RTGS System Rules and such member's arrangement with the BFIs for funding. NPI shall be available at all times for exchange of messages by such member but s.
3. It shall be the responsibility of the respective members to manage and fund their settlement accounts of the underlying core systems.

### 6.2. Finality of Settlement

The finality of payment and settlement shall be as per the Operating Rules or Procedures of the underlying core systems. Normally the transactions are irrevocable once response of debit confirmation is received by the system from the debtor bank and the service is rendered or credit leg of the transaction initiated. However, the finality of payment shall be immediate for real-time payment system and after the final settlement for non-real time payment system.

## 7. Responsibilities

### 7.1. Direct Member Responsibilities

The NPI member shall have responsibilities to:

1. Maintain uninterrupted and secured connectivity with NPI based on the underlying protocols supported by NPI to ensure that the systems, channels and instruments are integrated properly.
2. Ensure that adequate infrastructure and security arrangements for the system, integrations and associated services are implemented, timely upgraded and monitored. It shall be the responsibility of the members to ensure security standards and controls in the systems, channels and instruments integrated with NPI, as may be prescribed by NCHL and/or NRB. NCHL may specify additional security checklist to maintain a minimum technical standard for NPI.
3. Ensure that the financial and non-financial instruction messages are transmitted electronically through NPI as per the defined workflows. For financial instruction, it shall also ensure that it is correct and has debited the account before initiating such instructions. Based on arrangement and integration, such debit leg may be handled by NPI itself or as Debit Not Required case. However, the member shall be liable for any wrong data entry of payment instruction and shall make sure that the instructions initiated from it or its customers are valid, complete and necessary authorization or supporting are obtained from the customer.
4. Ensure that technical setups are completed and tested prior to rollout of each channel or use case or instrument through NPI and also confirm controls for data integrity and security of transactions initiated from such channels.

5. Own and apply authentication credentials at network and application layers along with the validations, as prescribed. Member shall be responsible to safeguard such credentials.
6. Authorize NCHL to use its keys for initiating credit transaction on its behalf in the underlying system, if required. However, necessary controls shall be arranged by NCHL to safeguard such keys.
7. Provide its customers with sufficient information to understand payment process through NPI, its underlying systems and/or channels extended from NPI, such that their obligations, responsibilities, processing timelines and other information including return/reversal reasons are informed. It shall be the responsibility of the member to enter into an agreement or obtain consent to debit and/or credit its customer bank accounts and ensuring compliance to KYC.
8. Enroll creditors/merchants in the system by beneficiary account setup and other arrangements such that creditors/merchants can receive payments and such creditors/ merchants are also extended within NPI for other members or their customers to use for service interoperability.
9. Enroll indirect/technical members in the system by debtor account setup and other arrangements, such that the members can initiate transactions and such indirect/technical member services are also extended within NPI for other members or their customers to use as service or member interoperability.
10. Ensure validity and legality of transactions initiated through NPI including compliance to AML/ CFT, sanction checks or other relevant legislations as may be required. The member as settlement bank of indirect/ technical member may reject and/or withhold any transactions that it deems violates such policies and timely report such cases as per the regulation.
11. Ensure timely reconciliations of transactions through NPI and in the underlying system, as per this operating rules and as per the underlying payment systems.
12. Ensure that there are no interlinking or multi-tier interfaces at member level that may adversely impact security or performance of NCHL, its members, NPI and the underlying systems.
13. Allow and adhere with interoperability of members, their systems and services, such that other members are able to transmit and receive financial and non-financial messages with each other within NPI network.
14. Comply with the Operating Rules of NPI, underlying payment systems, any other guidelines, checklists as advised by NCHL and/or any other instructions by NRB.

## **7.2. Indirect/ Technical Member Responsibilities**

The NPI indirect/ technical member shall have responsibilities to:

1. Maintain uninterrupted and secured connectivity with NPI based on the underlying protocols supported by NPI to ensure that their systems, channels and instruments are integrated properly.
2. Ensure that adequate infrastructure and security arrangements for the system, integrations and associated services are implemented, timely upgraded and monitored. It shall be the responsibility of the members to ensure security standards and controls in the systems, channels and instruments integrated with NPI, as may be prescribed by NCHL, its settlement member and/or NRB. NCHL may specify additional security checklist to maintain a minimum technical standard for NPI.
3. Ensure that the financial and non-financial instruction messages are transmitted electronically through NPI as per the defined workflows. For financial instruction, it shall also ensure that payment details are correct for debiting the specified account. The member shall be liable for any wrong data entry of payment instruction and shall make sure that the instructions initiated from it or its customers are valid, complete and necessary authorization or supporting are obtained.
4. Ensure that technical setups are completed and tested prior to rollout of each channel or use case or instrument through NPI and also confirm controls for data integrity and security of transactions initiated from such channels.
5. Own and apply authentication credentials at network and application layers along with the validations, as prescribed. Member shall be responsible to safeguard such credentials.

6. Enter into an agreement or arrangement with direct member as settlement bank and provide debit authorization to debit and credit its account based on instruction received through NPI. Details of such accounts and authorization shall also be shared with NCHL as part of membership agreement.
7. Understand payment process through NPI and/or its underlying systems such that the obligations, responsibilities, processing timelines and other information including return/reversal reasons are informed. It shall also be the responsibility of the member to provide such information to its customers and creditors/merchants.
8. Enroll customers and/or creditors/merchants in the underlying system, as allowed by regulation, and allow NCHL to extend the services of member itself and its enrolled creditors/merchants within NPI for other members or their customers for member or service interoperability.
9. Ensure validity and legality of transactions initiated through NPI including compliance to AML/ CFT, Sanction checks and other relevant legislations. The settlement bank of indirect/ technical member may reject and/or withhold any transactions that it deems violates such policies.
10. Ensure timely reconciliations of transactions processed through NPI, as per this operating rules.
11. Ensure that there are no interlinking or multi-tier interfaces at member level that may adversely impact security or performance of NCHL, its members, NPI and the underlying systems.
12. Allow and adhere with interoperability of members, their systems and services, such that other members are able to transmit and receive financial and non-financial messages with each other within NPI network.
13. Comply with the Operating Rules of NPI, underlying payment systems, any other guidelines, checklists as advised by NCHL and/or any other instructions by NRB.

### 7.3. NCHL Responsibilities

NCHL shall have the responsibilities to:

1. Maintain uninterrupted and secured connectivity between NPI, underlying systems and members to ensure that the systems, channels and instruments are integrated properly.
2. Ensure that adequate infrastructure and security arrangements for NPI, underlying payment systems, integrations with members & services are implemented, timely upgraded and monitored. It shall be the responsibility of NCHL to maintain the systems and data in a secured environment with replication to Disaster Recovery (DR) site as per its RTO and RPO.
3. Support members for technical setups and integration of their channels, services (provided by member's creditors/merchants) and indirect/ technical members. It shall be the responsibility of NCHL to implement controls for data integrity and security of the messages routed through NPI and within its network. However, it shall be the responsibility of the members to confirm such setup and testing.
4. Ensure that the services of members and creditors/ merchants are extended within NPI for other members or their customers to use as member and/or service interoperability.
5. Ensure that the financial and non-financial instruction messages are received and routed to the respective underlying system or member or service provider, as per the defined workflows. For financial instruction, it shall ensure that debited leg has been confirmed, unless for the case of Debit Not Required, prior to routing of such instructions.
6. Ensure settlements are executed for the underlying payment systems as per their Operating Rules or Procedure of the underlying payment systems.
7. Extend services and usability of NPI to enhance its functionality, use cases, products, new instruments and ensuring interoperability of services. For new instruments, NCHL or the member owning such instrument shall obtain necessary approvals from NRB.
8. Establish Helpdesk for 1<sup>st</sup> line of support to all the participating members and 2<sup>nd</sup> line of support to their customers during business hours.
9. Inform all participants of any event, which might affect the operations of NPI including any contingent events, known or planned disconnection or significant changes at members' end or at NCHL. Necessary notification to the members shall be made by NCHL through an appropriate communication channel.



10. Monitor participating members, integrated channels, services and underlying systems to avoid misuse of the system and to ensure that the members comply with the Operating Rules. NCHL shall act as a custodian of data, information received and/or stored with regards to the transactions.
11. Publish related user manuals, guidelines, fees and charges schedule, as may be required, to facilitate members, their customers and/or creditors/merchants.
12. NCHL as an operator of the system shall not be held liable under any circumstances for any fraudulent cases involving transactions initiated from members.

#### **7.4. NRB Responsibilities**

Nepal Rastra Bank shall have the responsibilities to:

1. Settle the transactions initiated from NPI and processed through the underlying core systems as per their Operating Rules/ Procedures. The settlement done by NRB shall be final and irrevocable.
2. Terminate, suspend, resume or withdraw member.
3. Amend provisions of this Operating Rules upon recommendation of NCHL and/or member BFIs.
4. NRB shall not be held liable under any circumstances for fraudulent cases involving transactions.

All the above responsibilities requiring notification to the members will be made by NCHL through an appropriate communication channel.

#### **7.5. Third Party Integrator Responsibilities**

Third Party Integrator shall have responsibilities to:

1. Establish and maintain a valid arrangement with sponsoring member(s) such that the systems and/or integrations provided to sponsoring member(s) are inter-connected with NPI for transaction processing. However, it shall be the responsibility and liability of the sponsoring member for the transactions initiated from such systems and/or integrations and to ensure compliance of such Integrator, as may be prescribed by NCHL or NRB.
2. Ensure that technical setups are completed and tested prior to rollout of each channel or use case or instrument through NPI and also confirm controls for data integrity and security of transactions initiated from such channels.
3. Maintain and ensure uninterrupted connectivity that the instructions routed to NPI through sponsoring member comply with the message specifications, technical standards and security controls of NPI.
4. Ensure that there are no interlinking or multi-tier interfaces that may adversely impact security or performance of NCHL, its members, NPI and the underlying systems.
5. Comply with the Operating Rules of NPI, underlying payment systems, any other guidelines, checklists as advised by NCHL and/or the sponsoring member.

All responsibilities and liabilities of transactions initiated from such Third Party Integrator shall be of the sponsoring member and shall ensure compliance of such Integrator, as may be prescribed by NCHL or NRB.

#### **7.6. Service Provider or Creditor/Merchant Responsibilities**

Service Providers or Creditors/ Merchants enrolled by the members shall have responsibilities to:

1. Provide correct information and needed supporting documents as part of its KYC to creditor bank for creditor/ merchant enrolment and linking of its bank account(s) and ensure at all times that such account is active. Any changes thereafter in bank account details have to be re-verified and re-configured through the respective bank.
2. Ensure validity and legality of transactions that are initiated including compliance to the prevailing laws and regulations of AML/CFT and other relevant legislations. The bank may reject and/or withhold any of the transactions that it deems violates any such policy/regulations.

3. Provide access to their service APIs through secured network to integrate within NPI for service interoperability. Also ensures that security standards and controls in such service integrations, as may be prescribed by its enrolling member and/or NCHL.
4. Ensure that technical setups are complete and tested prior to rollout of integration.
5. Securely store its username, password, OTP, PIN, and/or other credential details. Members and NCHL shall not be held liable in any case of financial or non-financial loss/damage or fraudulent transactions caused due to any sort of compromise of such credentials by creditor/ merchant.
6. Be aware of applicable fees and charges for using underlying payment systems through members and shall ensure that they are communicated to the debtor/customer, if they are liable for such fees and charges.
7. Inform its customer or debtor directly or through creditor member, in case of exceptions like product/service not rendered, to initiate refund/reversal process. Ensure that its account has adequate balance for initiating return/reversal transactions and shall verify correct beneficiary identifier or beneficiary account details to initiate such return/ reversal transaction.
8. Check and verify account statement or advice obtained from its member or the channels for necessary reconciliations of transactions. In case of any unreconciled transaction or any dispute/complaint, its shall consult its enrolling member.
9. Handle its debtor customers for any damage, claim, issue arising or in connection with any purchase of goods/services or proof of such purchase thereof from the creditor/ merchant. The creditor/ merchant understands and agrees that all such losses, damages and issues shall constitute a claim against it by customers and in no cases the member BFIs, NCHL and/or party to the system shall be held responsible for.

## 8. Fees, Charges and Penalties

All members in NPI shall pay fees and charges to NCHL for their participation and usage. NCHL shall reserve the right to define or modify the fees and charges at any time with prior notice with sufficient time provided to the participants. However, the applicable fees, charges and penalties shall be fixed in a fair, reasonable and non-discriminatory manner.

### 8.1. Annual Subscription Fee

Each Member shall pay annual subscription fee to NCHL. Such fee to existing direct members shall be waived, who have subscribed to NCHL-ECC or NCHL-IPS or *connect*IPS. Annual subscription fee for existing indirect/ technical members and integrators to access NPI shall be as defined and published by NCHL. However, all use cases and/or instruments and/or systems extended through NPI shall be available to all the members.

### 8.2. Transaction Fee

1. Participant shall pay transaction fees on each transaction as applicable in the underlying core system or service provider or as per the specific use case or instrument defined through NPI, corresponding to which the fees liability could be on debtor or creditor based on the use case or instrument.
2. Transaction fees for Net settlement use case shall be applied based on the number of BFIs within which the multi-lateral settlement is to be processed, unless for specific cases.
3. Transaction fees on NEPALPAY QR and Inter-network QR payment shall be applied to acquirer, unless for specific cases of surcharge to issuer, which will be guided by QR Operating Rules.
4. NCHL shall circulate the transaction fees structure of all such specific use cases or instruments including details as and when they are activated or changed in the system to all the participants or as per the directive of NRB.

### 8.3. Other Charges

NCHL or as per NRB's instruction may define and apply Other Charges/ Penalties on:

- Complaints on delayed customer account credit.
- Complaints such as Incorrect Rejection Reason.
- Charge backs as per exception handling cases

## 9. Reports

NPI shall provide different sets of APIs to fetch reports related to transactions processed by members, which includes at least the followings:

1. Transaction Batch Query
2. Transaction Query
3. Master Query

## 10. Continuity of Business

This section provides the continuity of business information for the related parties of the system in the unlikely events of disruption to preserve customer confidence, ensure regulatory compliance and mitigate systemic risks. NCHL shall ensure availability, consistency and recoverability of the *connectIPS* system. All participants shall also adopt a business continuity plan to ensure its resilience and preparedness for any such unplanned disruptions.

The participants shall contact the first line support team (Helpdesk) at NCHL through the communication channel made available by NCHL in case of facing any problems in order to get the suitable support during disruptions such as communication failure or line disconnection.

### 10.1. Communication Failure at Member's Site

The member shall immediately inform NCHL in case of facing any communication failure, connectivity problem or any other disruption situation from their end.

NCHL shall evaluate the disruption situation (if it is a communication failure or can be resolved within a short period without having any impact on the continuity of business) and, provide the member with the suitable contingency procedure based on the level of failure or inform NRB and all participants about the disruption (if cannot be resolved within such period).

### 10.2. Failure at NCHL Main Site

NCHL shall immediately inform NRB and all participants of the failure and then activate the Disaster Recovery site to continue or re-start the system accordingly. The members will be connected to the DR site automatically.

### 10.3. NCHL Disaster Recovery Plan

In addition to the high availability provided for the system (from the main site and DR site), NCHL shall maintain and periodically test its disaster recovery plan to address

1. the replication and restoration of NPI systems and services that ensures processing from alternate facility;
2. the backup and recovery of critical data within defined recovery point objective;
3. the operational recovery within defined recovery time objective.

## 11. Helpdesk

A dedicated first-line support team shall be available during NCHL's office hours to support the participant BFIs for smooth operation of NPI; troubleshoot and provide suitable diagnosis if any member faces problem in the system. The participant member shall assign a person to contact the helpdesk and report problems through a proper communication channels that will be shared with NCHL.

Moreover, the helpdesk shall have clear prioritization criteria to the requests, such that the reported problems shall be categorized according to their urgencies and priority levels in order to provide a proper handling to each priority level.

Priority	Definition
<b>Urgent</b>	A catastrophic problem which may severely impact NPI operation, or in which NPI is down and not functioning with no procedural work around available. A prompt response and a quick action must be taken
<b>High</b>	A problem where NPI is functioning but in a severely reduced capacity. The situation is causing significant impact in NPI's business and functions.
<b>Normal</b>	A problem with a medium or low impact to NPI business and functions. Such problem is considered as a "Minor" with limited loss or no loss of functionality or impact to the participant member's daily process.

## 12. Dispute Management

1. NCHL shall not have any duty to determine legality, validity or enforceability of any NPI transaction or to determine whether such transaction is contractually void or voidable. NCHL shall be entitled to consider all transaction(s) executed under the system as legal, valid and enforceable.
2. In case of customer complaints related to transactions, the first point of contact for customer and merchant/ creditor shall be their respective members. In case of merchant payments in which service/product is not rendered, the customer's first point of contact shall be such service provider/ merchant and its debtor bank. If any information and necessary coordination are required to the member, then it shall request to NCHL for appropriate support.
3. In case of a disputed transaction reported by an authorized person from member and/or NCHL, the creditor bank shall support in resolving the dispute and/or investigation, until which it shall block the available transaction amount, as may be the case.
4. In the event of dispute or differences arising between the participants and if the parties are unable to resolve amicably, the matter shall be referred to NCHL for formation of the Arbitration Tribunal and NCHL shall be responsible to appoint an independent sole Arbitrator and same shall be immediately notified to disputed parties. The arbitration proceedings shall be conducted in Kathmandu in accordance with the provisions of the Arbitration Act, 2056 of Nepal, and enactments/ modifications, if any, thereof. The Arbitration decision shall be final and binding upon all the parties. The cost of the arbitration shall be equally borne by the disputed parties.
5. In the event of the dispute between NCHL and the participant(s), which the parties are unable to resolve amicably, the matter shall be referred to a final and binding arbitration.
6. NRB shall be the final authority to interpret this Operating Rules.

## 13. Insurance

NCHL undertakes no responsibility in respect of any failure/defect, forgery, theft, or any wrongful copying of any software, password, or any combination of them, assigned to or designated by a member/participant or NCHL. It is a responsibility of each Member/Participant to have an insurance coverage against such or any other incidents.

## 14. Obligations

### 14.1. Indemnity

1. Participants shall indemnify and hold harmless NCHL, its directors, officers, and employees from all liabilities or expenses (including but not limited to reasonable attorney fees and costs of investigation and defense) resulting from: (i) any business loss resulting from breach of the terms of this Operating Rules; (ii) any violation of any statute, ordinance, or regulation; (iii) any act or omission constituting negligence or wilful misconduct or breach of fiduciary duty in connection with NCHL performance or services. Participant hereby represents and warrants that in the event of any suits, claims, disputes or such differences are brought directly against NCHL with respect to NPI, as a consequence of breach of the terms and conditions of this Operating Rules, participants shall assist NCHL in defending such suits, claims, disputes or differences. (iv) in the event that NCHL becomes aware of any obligations, representation or warranty of participants as being false or misleading, participants shall be liable to indemnify NCHL for any such injury, loss or damage arising out of such misrepresentation. For clarity, participants shall only be liable for actions that originated from participants or any third party acting on its behalf and participants shall not be liable for issues arising solely and independently from NCHL.
2. In the event that after a member has participated in the system, NCHL becomes aware of any obligations, representation or warranty of the participant as being false or misleading, participant shall be liable to indemnify NCHL for any such injury, loss or damage arising out of such misrepresentation.
3. The debtor and creditor customer agree, at its own expense, to indemnify, defend and hold harmless NCHL and the participating BFI, its directors and employees, representatives, agents, and its service providers against any claim, suit, action or other proceeding brought against NCHL and/or the BFI, its affiliates, directors and employees, representatives or agents by a third party, to the extent that such claim, suit, action or other proceeding brought against NCHL, BFI, its service provider, directors and employees, representatives or agents is based on or arises in connection with the use of NPI.

### 14.2. Confidentiality

Participant shall use all reasonable endeavors to ensure that information relating to NPI, which is not in the public domain shall be treated as confidential and shall not be disclosed to anyone except with the prior written consent of NCHL and except as may be required by law or by any Government Authority. Nothing in this clause shall however prevent any of the parties from disclosing any of the information to their agents and representatives or attorneys, provided that such disclosure is on a need to know basis and for the purpose of normal functioning of business activities. All information provided by participant in NPI shall not be used to secure a commercial advantage over the other.

### 14.3. Force Majeure

NCHL shall promptly notify NRB and participants in writing or an appropriate channel of any situation or of occurrence of any event beyond the control of NCHL, which makes it impossible for NCHL to continue operation of NPI. NCHL shall not be liable for any delay in meeting or for failure to provide its services under the NPI Operating Rules due to any cause beyond its reasonable control.