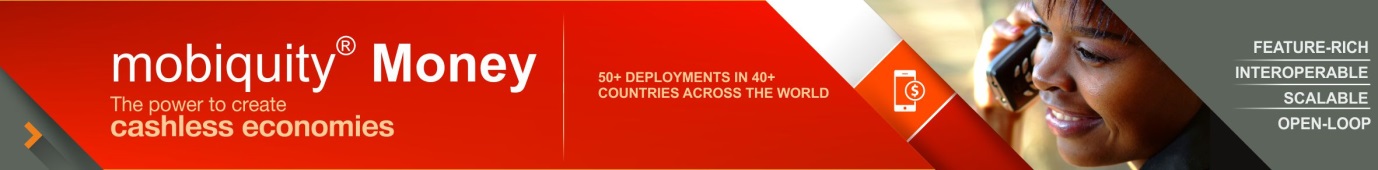


**Functional Specifications Document**

**Orange Morocco HPS Integration**

**Document Version: 1.11**

**Date: 14-05-2019**



Document Change History

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Version Number | Date | Description of Changes | Author | Reviewer | Comments |
| 1.0 | 12-12-2018 | Initial draft | Prateek Teotia |  |  |
| 1.1 | 04-01-2019 | Changes post review | Prateek Teotia |  |  |
| 1.2 | 18-01-2019 | Changes post onsite workshop | Prateek Teotia / Nusrat Jabin | MComviva technical team |  |
| 1.3 | 28-01-2019 | Changes in enrolment flow as suggested by Orange Team | Nusrat Jabin | MComviva technical team |  |
| 1.4 | 01-02-2019 | Updated P2P & merchant payment flows as per Orange feedback | Nusrat Jabin | Orange technical team |  |
| 1.5 | 08-02-2019 | Included resend OTP case in enrolment flow  change mobile number marked as out of current scope | Nusrat Jabin | Orange technical team |  |
| 1.6 | 25-02-2019 | Updated FSD AS per comments received from Orange | Nusrat Jabin | Orange technical team |  |
| 1.7 | 28-02-2019 | Updated sequence flows as per comments received from Orange | Nusrat Jabin | Orange technical team |  |
| 1.8 | 13-03-2019 | As per Orange morocco feedback, removed the SMS and API notification from each case in HPS enrolment flow, SMS/API based notification is sent in the final response case.  Add scenario where HPS reference number is not received at InterOp  Removed intermediate response and made the enrolment flow synchronous between access channel, InterOp and HPS. | Nusrat Jabin | Orange technical team |  |
| 1.9 | 18-03-2019 | Added LIS management section  Updated MP push type service flows | Nusrat Jabin | Orange technical team |  |
| 1.10 | 01-04-2019 | Updated following points:  InterOp should store only MSISDN to identify the default wallet  InterOp should send a user enquiry request to Tango system to get the user type details  InterOp should execute a scheduler to handle the ongoing status records  InterOp should only send SMS notifications no App notifications in current scope | Nusrat Jabin | Orange technical team |  |
| 1.11 | 14-05-2019 | Updated p2p Transfer claim management (ambiguous transaction management) and P2P transfer dispute/refusal processing | Nusrat Jabin | Orange technical team |  |
|  | | Source: Comviva | | | |

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# Document Information

This chapter gives a brief introduction to the scope and organization of the document.

## Context and Perspective

The purpose of this specification document is to describe the interoperability requirement of HPS switch integration for mobiquity Money.



## Document Scope

The scope of this document is to provide functional details of the services that need to be built as a separate module for current mobiquity system in order to support HPS switch integration and interoperability services.

The current document is a draft version and is only for reference. Changes not limited to approach/flows can occur basis further discussion with the Orange team.

**Note:** This FSD has been formulated basis BRD shared, verbal communication over calls with Orange Morocco business team and e-mail exchanges. So Once FSD is signed-off only this document will be referred for scope of Change Request (CR) in future.

No other document and communication will be referred. If there is a change in the scope, then FSD needs to be updated, shared with Orange Morocco team. Sign-Off to be provided on the latest version. (which may lead to changes in efforts and delivery date)

## Requirement Reference

| Document, Web-link, E-mail | Author / Sender (if applicable) | Version / Date (if applicable) |
| --- | --- | --- |
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## Acronyms, Abbreviations and Conventions

This section provides a list of all Acronyms or Abbreviations and terms required to properly interpret the document*.*

### Acronyms & Abbreviations

| Term | Full Form |
| --- | --- |
| SMS | Short Message Service |
| USSD | Unstructured Supplementary Service Data |
| MSISDN | Mobile Subscriber Integrated Services Digital Network Number (i.e. Mobile Number) |
| PIN | Personal Identification Number |
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### Conventions

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| --- |
| * Depicts important note |
| \* Depicts mandatory field |
|  Depicts important open item |

## Intended Audience

Orange Morocco team of product management, product validation group, marketing, operations, project & program management, change management, documentation and technical (IT) personnel are responsible for evaluating, architecting, specifying, implementing and operating the mobiquity® system are the intended audience for this document.

## Limits of the Document

The document describes only the functional details of the HPS integration. Technical implementation details are not covered in this document.

# HPS switch integration

## Requirement

As per national regulatory body of Morocco, it is mandatory for the mobile financial system to provide interoperability and hence the same should be integrated with the HPS switch.

This capability will enable the customers of one Mobile Financial System to transfer money to a customer belonging to any other Mobile Financial System in the same country integrated with HPS.

## Proposed Solution

This section explains the functional flow of different MFS services with respect to interoperability capability along with HPS switch integration.

### User registration (System Admin, Channel User and Customer)

Following is the approach proposed and applicable business rules:

* All system users, channel users- agent, merchant, distributor, partners-billers & customer will be maintained in mobiquity system.
* System admin user registration process will remain as per the current functionality.
  + In other words, there will be no interaction with HPS system.
* Channel User, Partners & Customer registration will remain as per the current functionality.
  + In other words, there will be no interaction with HPS system.
* A user (merchant or customer) **belonging to any operator** is allowed to register in Orange mobiquity system hence there should not be any operator prefixes defined in the mobiquity system.
  + With same mobile number, a user can register in different Mobile Financial systems. E.g. Orange mobile operator customer can register on Orange mobiquity system, Maroc MFS or any other MFS system.
* Users belonging to ‘Orange operator’ can access the mobiquity services through USSD, mobile & web interface. While other operator users can access Orange mobiquity services through web interface and Mobile app basis availability from the service provider.
  + The access channels are outside the scope of mobiquity platform.
* As per current agreed scope, mobiquity Customers & Merchants will register at HPS switch
  + HPS will store user information like- mobile number (registered in mobiquity) and the default wallet operator for the user.

#### Business Flow

The customer/merchant would have the following option to register on mobiquity and enroll for the interoperability service. Please find below the details for nomenclature.

* Registration is applicable for the mobiquity system.
* Enrolment is applicable for the HPS system

##### Registration

This would allow the customer and merchant to be registered on the mobiquity system.

* The onboarding would be as per the current functionality.
* Any changes to the registration flow would be outside the scope of Comviva.

##### Registration and Enrolment

This would allow the customers and the merchants to be on-boarded on the mobiquity platform as well as get enrolled on the HPS system for interoperability. To enroll for interoperability, subscription/access channel should call the Registration API.

* The customer would have an option to choose the interoperability option at time of registration. In other words, if the customer chooses this option, the customer would be first registered successfully on the mobiquity system. Post registration, the Orange system would send a request to the InterOp Module to enroll the customer for the HPS service.
  + Separate request would be sent for the registration and enrolment to the mobiquity and InterOp system respectively.
    - The request would be sent from the Orange Add-On system, which is outside the scope of mobiquity.
    - 2 separate requests would be sent.
    - In case, an enrolment request is received by the InterOp system, the user would be enrolled at the HPS subject to validations.
    - For enrolment flow details, please refer to section 2.2.2
* Merchant registration is done through web interface via Channel admin only. There will not be any change in existing mobiquity channel user registration flow. After successful merchant registration in mobiquity system merchant will use ‘Enrolment’ service available for merchants in their respective access channels (access channels are out of mobiquity scope) to enroll for interoperability. Merchant code should be stored at InterOp DB.

#### Business Rules

* The customer’s and merchant’s registration status and default wallet would be stored only on InterOp Add-On post the user has enrolled for the interoperability service. To get the default wallet status following system should be accessed based on below conditions
  + In case the user has not opted for the interoperability service
    - The registration details would be fetched from the mobiquity system through user enquiry.
    - The default wallet details would be fetched from HPS using the wallet consultation service.
  + Any changes to the access channel would be outside the scope of Comviva.

### Enrollment for Interoperability

* If a mobiquity registered Customer or Merchant wants to enroll for interoperability services, there will be an additional service option which needs to be made available on required access channel to enroll for interoperability.
  + Any customization on the access channel is outside the scope of mobiquity Money platform.
* By enrollment for interoperability user is setting their default wallet at HPS. If user is selecting enrolment service of Orange mobiquity system, it implies that he/she wants to set Orange wallet as their default wallet on HPS.
* If Merchant/Customer selects –interoperability enrolment option on the access channel.
  + The request is sent from the access channel/subscription component to the InterOp Add-On. Communication between subscription component/access channel and InterOp will be in synchronous mode.
* InterOp should validate if user has already set their Orange Money wallet as Default on HPS. If record is available InterOp should send back response with valid error message. InterOp should manage the user’s default wallet only based on user’s MSISDN as unique identifier. InterOp should not store user type information at their end.
* If enrolment for given mobile number is not found at InterOp, InterOp Add-On will store the enrolment details with ‘Reg ongoing’ status and send an enrolment request to the HPS system for registration with requested mobile number.
  + HPS switch will send a one-time password (OTP) on requested mobile number.
    - This is outside the scope of Mahindra Comviva.
  + In case of error/failed response received from the HPS system, the enrolment will failed and InterOp should send the error message to the access channel and user needs to re-initiate the enrolment process.
  + In case success response is received by InterOp system and requested mobile number doesn’t receive the OTP for enrolment, requester should choose the resend OTP option displayed on the access channel
    - This should be outside of Mahindra Comviva scope
  + Resend OTP request should land on InterOp. InterOp should send the resend OTP request to HPS. HPS should validate the received request and generate a new OTP and send the SMS notification on requested mobile number and send a response to InterOp system.
* On mobiquity App/USSD, the system should ask the user to enter the received OTP. InteOp will expose an enrolment confirmation API with OTP.
  + There should be option for resend OTP on the app.
  + OTP expiry duration should be managed by HPS.
  + Access channel is outside the scope.
* User enters the received OTP on USSD/App or and submit the enrolment confirmation request.
  + The request is sent from the access channel to the InterOp Add-On.
* InterOp Add-On will send enrolment confirmation request to HPS.
* HPS validates the received enrolment confirmation request. If the request is valid, HPS stores the enrollment details of requested mobile number for requested MFS system and send back response to InterOp Add-On system.
  + In case of success response from HPS, InterOp Add-On will update the enrolment status as ‘Y’ to identify the interoperability status of user’s wallet. This flag denotes that user has marked their Orange wallet as default wallet on HPS switch.
    - If user had set any other Service provider MFS wallet as default, HPS will be responsible to notify the previous default wallet provider to update the status of default HPS wallet as ‘N’ at their end.
  + In case of response timeout from HPS, InterOp Add-On should send back response to user as received from HPS and InterOp Add-On will keep the default wallet flag as ‘reg-ongoing’
  + InterOp should execute a scheduler which should run on configured time duration. This scheduler should fetch all records where status is marked as ‘Reg\_ongoing and send the check wallet status request to HPS one by one. If HPS sends the response as user wallet is set as default then InterOp should update the default wallet status as ‘Y’ else if HPS does not found the default wallet, InterOp should delete those default wallet records.
  + For each ‘ongoing status’ scheduler execution InterOp should generate a log file which should contain the number of records fetched with ongoing status
  + In case of connection timeout, InterOp Add-On will not set the flag for user and delete the stored default wallet record with status flag ‘reg-ongoing’
* If user has enrolled for interoperability, and tries to enroll again
  + A request will be sent to the InterOp system.
  + The InterOp system should send back the response that the user is already registered for the service.
  + A proper error message should be displayed to the user.
* In case user is already registered with another MFS at HPS, after successful enrolment for Orange, HPS should send request to colleague MFS to remove the default flag of their wallet as customer has set another wallet as default.
* If any error is received from HPS, InterOp Add-On will notify the user with received error.

#### Process Flow

Refer the revised sequence flow diagram

#### Impact on Online Reports

* User Registration details report should be provided by the InterOp Add-On. The content of the report will be decided during detailed spec phase.
  + First name
  + Last Name
  + MSISDN
  + Default Wallet (Y / Registration On-Going / Deregistration On-Going)

#### Notification

* InterOp will send the SMS notification only.
* There should not be any Push to the USSD.

### Change default wallet

When a user is enrolled in the HPS through another MFS system, the default wallet of the user is changed to the MFS provider which has initiated the enrolment.

* User would not have an option on the access channel to change its default wallet at HPS switch.
* The default wallet would be changed once the user initiates the enrolment through another MFS provider
* In this process, the user will access the enrollment service from other MFS channel and request HPS for change default wallet.
  + The user would access the enrolment service through one of the access channel of other service provider.
* Once user has initiated enrolment with another MFS, HPS should notify Orange InterOp Add-On system to un-flag the default wallet at their end.
  + The InterOp Add-On will delete the data of the user from the system. In other words, the user would no more be registered on the InterOp Add-On.
  + Post successful validation of the de-register request DB record for default HPS wallet will be hard deleted.
* Post receiving the request from the InterOp, the HPS system will send the response to the other MFS.
* InterOp will not maintain the history of InterOp enrolment once user data is deleted from InterOp DB.
* On successful default wallet deletion InterOp should send the SMS notification

#### Business Flow

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Note: Step 8 will be used to update the flag at previous MFS system

#### Notification

* InterOp will send the SMS notification only.

### Deregister default wallet

Following is the approach proposed and applicable business rules:

* There can be following two ways to deregister user’s default HPS wallet

1. The back end user initiates the delete user from mobiquity web portal.
   * Once user is successfully deleted from the mobiquity system, a push would be sent to the InterOp system to deregister the user from the HPS system and is called DeregisterAfterDelete.
2. User selects the deregister default wallet option on access channel
   * Access channel should send the deregister request to InterOp. InterOp should call HPS deregistration API to deregister the user’s default wallet. Hence should deregistration default wallet without deleting the user from Tango system.

* Post receiving the deregistration request InterOp will initiate the deregistration process.
* InterOp Add-On validates if user has set their Orange wallet as default at HPS.
  + If Flag =’Y’
    - InterOp Add-On update the status as ‘Dereg\_ongoing’ and sends deregister request to HPS with mobile number
    - HPS deregister the Orange wallet at their end and send back response to InterOp Add-On
      * If response from HPS is successful, InterOp Add-On will delete the user from its enrolment table
      * If response from HPS is failure, InterOp Add-On will not update the default wallet flag. A new scheduler should be configured at InterOp which should run on configured time duration. Once this scheduler runs InterOp should fetch the list of all records with status ‘Dereg\_onging’ and send the de-registration request to HPS one by one to delete the default wallet for those records.
      * If no response from HPS, InterOp Add-On will not update the default wallet flag.
  + If the user is not found in the InterOp system
    - InterOp Add-On rejects the deregister request.

#### Business Flow

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#### Process Flow

Refer details sequence flow diagram attached in section 2.2.2.1

#### Notification

* InterOp will send the SMS notification only.

### HPS Pool wallet management

To process the transactions through HPS, mobiquity platform would maintain a pool HPS wallet. This wallet should be used for any transaction processing via HPS.

* A pool HPS wallet can be created in mobiquity system using existing ‘Channel user management’ functionality.
* To process the interoperability based transactions multiple wallets would be created based on transaction type and accordingly respective wallet should be debit and credit.

### Money Transfer (P2P)

Following is the proposed approach and business rules:

* A P2P transfer service is applicable to Orange mobiquity customers. Using this service, Orange registered customer can transfer money from their Orange wallet to any other registered/unregistered Orange customer as well as any other operator customer’s HPS default wallet directly.
* Customer logs in on Orange App/USSD and selects P2P Transfer service.
  + Access channel customizations is outside the scope of Comviva
* Customer enters the receiver mobile number, transaction amount and confirms the transaction with their PIN.
* The request is sent from the access channel to the InterOp Add-On.
  + The InterOp Add-On system checks the registration status and the default wallet against the receiver’s mobile number.
  + Basis the registration status and the default wallet set, the InterOp Add-On initiates a specific request to the mobiquity platform as defined in the scenarios below.
* In case the user has not opted for the interoperability service
  + The registration details would be fetched from the mobiquity system through user enquiry.
  + The default wallet details would be fetched from HPS using the customer status consultation service.
  + For better and easy understanding of each case processing, refer the below table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SNO.** | **Sender- Registered Orange customer** | **Receiver- Registered Orange customer** | **Set Orange wallet as Default on HPS** | **Set other MFS wallet as default on HPS** | **Service Applicable** |
| 1 | Y | Y | Y |  | On Us-P2P registered |
| 2 | Y | Y | N | N | On Us-P2P registered |
| 3 | Y | Y | N | Y | Off Us- P2P through HPS |
| 4 | Y | N | - | Y | Off Us- P2P through HPS |
| 5 | Y | N | - | N | Transaction Failed |
| 6 | N (other MFS customer sending money to Orange customer) | Y | Y |  | Other MFS system send P2P transfer request to HPS & HPS forward the request to Orange mobiquity system |

* For all ‘On US’ cases transaction should be processed in synchronous mode between the channels and InterOp system. Channel should wait for response from InterOp Add on. In these cases Tango system will be responsible to send the SMS notifications. Tango should be responsible to send SMS. If the response from the P2P API is timeout from Tango no Notification API will be sent by InterOp and only the Tango SMS will go. This will be applicable for success and fail cases.
* For all ‘Off US’ cases transaction should be processed in asynchronous mode between the channels and InterOp system and InterOp will be responsible to send the SMS notifications.
* InterOp should send a ‘GetLang’ request to Tango system to fetch the user type information of the receiver mobile number since InterOp should not store the user type details for default wallet. This check is applicable in both cases where transaction is initiated by Orange users and transaction request is coming from HPS.
* System should allow to configure different service charge rules for ‘On Us’ and ‘Off Us’ transactions.
  + Once sender has entered the receiver mobile number amount and confirmed the transaction with their PIN, request should come on InterOp. InterOp should send the PIN verification request to Tango.
  + Tango system should validate the user’s PIN and send back a response to InterOp. InterOp should send transaction request to Tango and an interim response to channel as transaction request is received and it is under process.
  + Tango should process the transaction. Once transaction is completed final response should be communicated to the sender.
* SMS notification should display the post balance after successful transaction execution. For On-US transaction Tango should send the user’s post balance after transaction processing. In case of off-US transactions, InterOp should send a user enquiry request to Tango system to fetch the user’s balance.
* **(Scenerio-1)** If receiver is registered on Orange and receiver has set their Orange wallet as Default on HPS, mobiquity will treat this transaction as On Us. Refer the sequence flow below:
  + mobiquity validates P2P registered transfer business rules.
  + If all rules are validated successfully, money will be debited from sender’s Orange wallet and credited into receiver’s Orange wallet.
  + Request will not be sent to HPS switch.

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* **(Scenerio-2)** If Receiver is registered on Orange platform but is not registered on HPS**.**
  + The InterOp Add-On will send a request to the HPS system to provide the status of the default wallet of the receiver.
    - HPS validates the status of received mobile number and send back response to InterOp Add-On system
    - HPS responds that the receiver is not registered with HPS.
  + Basis response, the InterOp Add-On sends a request to the mobiquity platform.
  + mobiquity will process the transaction as ‘On US’ P2P transfer.
  + mobiquity validates P2P registered transfer business rules.
    - If all rules are validates successfully, money will be debited from sender Orange wallet and credited into receiver’s Orange wallet.
  + InterOp will send the notification on sender and receiver mobile number

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* **(Scenerio-3)** If Receiver is registered on HPS with another MFS system
  + In this case mobiquity will process the transaction as off us P2P transfer.
  + The InterOp Add-On will send a request to the HPS system to provide the status of the default wallet of the receiver.
    - HPS validates the status of received mobile number and send back response to InterOp Add-On system.
    - Basis response, the InterOp Add-On sends a request to the mobiquity platform
    - mobiquity process the request as per received response
  + mobiquity validates all the applicable business rules.
    - On successful validation of business rules, mobiquity debits the Sender wallet and credit HPS pool wallet and sends the response to InterOp Add-On
    - InterOp Add-On sends a money transfer request to HPS.
  + HPS sends the money transfer request to other MFS system where receiver has registered wallet.
  + Other MFS system should process the transfer request and credit the receiver wallet and send back response to HPS.
  + Based on the other MFS response, HPS forward the response to InterOp Add-On system.
  + The InterOp Add-On system sends the response to the mobiquity platform.
    - Based on success response from HPS, InterOp should send the SMS notification to App backend server. Communication with Tango system is not required after success response from HPS.
    - If received response is failure, mobiquity will revert the debit/credit and mark the transaction as failed.
    - If response is timed out, mobiquity will keep the transaction as ambiguous. Settlement of such transaction will be done by end of the day with HPS or through HPS claim management portal

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#### Transactions exception management

Refer below table for different use cases of exception management and resolution of ambiguous transactions with HPS.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SNO.** | **Sender MFS** | **HPS** | **Receiver MFS** | **Final transaction status** |
| 1. | transaction success (txn is pending) | Unavailable/connection time out |  | Sender MFS=Revert txn and mark it as Fail HPS=Txn not available Receiver MFS=Txn not available  This transaction record will not be found in HPS LIS file for sender and receiver. |
| 2 | transaction success  (txn is pending) | received p2p request  but response to sender as Receiver is not available  is timeout | Unavailable/connection time out | Sender=Ambiguous HPS=Fail Receiver MFS = Txn not available  Resolution of this ambiguous transaction at sender side will be done through HPS claim management portal or based on EOD LIS settlement file. Either way sender will reverse the transaction based and update the status as fail. |
| 3 (section 1.1.1.1 SID v.08) | transaction success (txn is pending) | Received P2P request  Send back response to sender as Receiver is not available | Unavailable/connection time out | Sender MFS= Revert txn and mark it as Fail  HPS=Fail Receiver MFS= Txn not available  This transaction record will be available in HPS LIS file of sender. |
| 4(1.1.2.2 SID v.08) | transaction success (txn is pending) | received p2p request but  response to sender is timeout | Received P2P request  Response sent to HPS | Sender=Ambiguous  HPS=Success/fail based on response received from receiver MFS  Receiver MFS =Success/Fail  Resolution for this ambiguous transaction at sender side can be done based on HPS claim management portal or based on EOD LIS settlement file |
| If status fetched from HPS Claim Management Portal or LIS File =Success  Sender MFS should update the transaction status from ambiguous to Success and notify the sender user. |
| If status fetched from HPS Claim Management Portal or LIS File =Fail  Sender MFS should reverse the transaction and credit back the user’s wallet. Also update the transaction status from ambiguous to Failed and notify the sender user. |
| 5 (section 1.1.3.2 SID v.08) | transaction success(txn is pending) | Received P2P request  Send back response to sender that transaction has timed out. | Received P2P request but  response to HPS is timeout | This case will be considered as success.  Sender MFS= Keep txn as Success HPS=will settle this txn regardless of its status at receiver end Receiver=  Receiver should resolve this transaction based on HPS Claim Management Portal or LIS file |

* Since in P2P transfer and Push based merchant payment sender is available in initiator MFS hence at HPS side same business rules will be applied for P2P transfer and Push based merchant payment
* **(Scenerio-4)** If receiver is registered in another MFS system & set other MFS wallet as default on HPS
  + mobiquity will process this transaction as off us P2P transaction. Sender wallet should be debited and HPS pool wallet will be credited.
  + Transaction will be processed same as Scenario -3.

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* (**Scenerio-5)** If receiver is not registered on the Orange platform or another MFS system
  + The InterOp Add-On will send a request to the HPS system to provide the status of the default wallet of the receiver.
    - HPS validates the status of received mobile number and send back response to InterOp Add-On system.
    - As the mobile number is neither registered on mobiquity nor on HPS, the transaction will fail.
* InterOp will send the SMS notification.

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* **(Scenerio-6)** If Orange customer receives P2P transfer by from other institutions customers
  + The HPS system will forward the request to the InterOp Add-On system.
  + The InterOp Add-On system will initiate the Cash IN API of mobiquity platform.
    - mobiquity will validate applicable Cash in business rules.
    - On successful validation, HPS pool wallet should be debited and receiver’s Orange wallet would be credited.
  + mobiquity should send back transaction response to InterOp Add-On system.
  + InterOp Add-On system should send back transaction response to HPS, which HPS should forward to requester MFS system
  + mobiquity will also send the transaction notification on receiver mobile number

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#### Notification

* No impact on SMS notifications, P2P transfer notification will be sent.
* InterOp will send the SMS notification only.

### Merchant payment- Push (initiated by customer- one step)

Following is the approach proposed and business rules:

* Similar to customer, Orange merchants can be registered in other MFS system and can set their default wallet at HPS.
* In customer initiated merchant payment, customer will launch the Orange mobile app/USSD & select the merchant payment option.
  + The access channel is outside the scope of Mahindra Comviva.
* Customer enters the merchant mobile number, enter amount for payment and confirm transaction with transaction PIN. *QR code based merchant payment in not considered in current scope. QR code generation and decoding specifications shared by HPS will be used to generate and process the QR code based payment.*
* The request is sent from the access channel to the InterOp Add-On.
  + The InterOp Add-On system checks the registration status and the default wallet against the merchant’s mobile number
  + Basis the registration status and the default wallet set, the InterOp Add-On initiates a specific request to the mobiquity platform as defined in the scenarios below.
* In case the merchant has not opted for the interoperability service
  + The registration details would be fetched from the mobiquity system through user enquiry.
  + The default wallet details would be fetched from HPS using the customer status consultation service.
  + System should allow to configure different service charge rules for ’On US’ and ‘Off US’ transactions.

Refer to below table for each scenario execution.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SNO.** | **Customer- Orange Registered** | **Merchant - Orange Registered** | **Merchant Default Wallet-Orange** | **Merchant Default Wallet – Other MFS** | **Service Applicable** |
| 1 | Y | Y | Y | - | On-Us Merchant payment |
| 2 | Y | Y | N | N | On-Us – Merchant payment |
| 3 | Y | Y | N | Y | Off us – Merchant payment via HPS |
| 4 | Y | N | - | Y | Off us – Merchant payment via HPS |
| 5 | Y | N | - | - | Transaction Fail |
| 6 | N | Y ( also registered in other MFS) | Y |  | Other MFS system send merchant payment request to HPS & HPS forward the request to Orange InterOp Add-On system |

* For all ‘On US’ cases transaction should be processed in synchronous mode between the channels and InterOp system. Channel should wait for response from InterOp Add on. In these cases Tango system will be responsible to send the SMS notifications. Tango should be responsible to send SMS. If the response from Tango is timed out, no Notification API will be sent by InterOp and only the Tango SMS will go. This will be applicable for success and fail cases.
* For all ‘Off US’ cases transaction should be processed in asynchronous mode between the channels and InterOp system and InterOp will be responsible to send the SMS notifications.
* InterOp should send a ‘RGetLang’ request to Tango system to fetch the user type information of the receiver mobile number since InterOp should not store the user type details for default wallet. This check is applicable in both cases where transaction is initiated by Orange users and transaction request is coming from HPS.
* System should allow to configure different service charge rules for ‘On Us’ and ‘Off Us’ transactions.
* At HPS side all business rules for Merchant payment- push type will be same as P2P transfer. Refer the P2P transfer sequence flow for merchant payment –push type service.
* SMS notification should display the post balance after successful transaction execution. For On-US transaction Tango should send the user’s post balance after transaction processing. In case of off-US transactions, InterOp should send a user enquiry request to Tango system to fetch the user’s balance.
* **(Scenerio-1)** If receiver is registered on Orange and receiver has set their Orange wallet as Default on HPS, mobiquity will treat this transaction as On-Us transaction**.**
  + InterOp sends the request to the mobiquity platform.
  + mobiquity validates merchant payment transaction business rules.
    - If all rules are validates successfully, money will be debited from sender Orange wallet and credited into merchant’s Orange wallet.
    - Request will not be sent to HPS switch.
* **(Scenerio-2)** If Receiver is registered on Orange platform but is not registered on HPS**.**
  + The InterOp Add-On will send a request to the HPS system to provide the status of the default wallet of the receiver.
    - HPS validates the status of received mobile number and send back response to InterOp Add-On system
    - HPS responds that the receiver is not registered with HPS.
  + Basis response, the InterOp Add-On sends a request to the mobiquity platform.
  + mobiquity will process it ‘On US’ merchant payment transaction. Refer steps for scenerio-1.
  + mobiquity will send the notification on sender and receiver mobile number
* **(Scenerio-3)** If Receiver is registered on HPS with another MFS system
  + In this case mobiquity will process the transaction as off us merchant payment.
  + The InterOp Add-On will send a request to the HPS system to provide the status of the default wallet of the receiver.
    - HPS validates the status of received mobile number and send back response to InterOp Add-On system.
    - Basis response, the InterOp Add-On sends a request to the mobiquity platform
    - mobiquity process the request as per received response
  + mobiquity validates applicable business rules.
    - On successful validation of business rules, mobiquity debit the sender wallet and credit HPS pool wallet and sends the response to InterOp Add-On
    - InterOp Add-On sends a money transfer request to HPS
  + HPS sends the transfer request to other MFS system where receiver has registered wallet.
  + Other MFS system should process the transfer request and credit the receiver wallet and send back response to HPS.
  + Based on the other MFS response, HPS forward the response to InterOp Add-On system.
  + The InterOp Add-On system sends the response to the mobiquity platform.
    - Based on success response from HPS, InterOp should send the SMS notification. Communication with Tango system is not required after success response from HPS.
    - If received response is failure, mobiquity will reverse the debit/credit and mark the transaction as fail.
    - If response is timed out, mobiquity will keep the transaction as ambiguous. Settlement of such transaction will be done by end of the day with HPS or through HPS claim management portal
* (**Scenerio-4)** If receiver is registered in another MFS system & set other MFS wallet as default on HPS
  + mobiquity will process this transaction as off us transaction. Sender wallet should be debited and HPS pool wallet will be credited.
  + Transaction will be processed same as Scenario -3.
* **(Scenerio-5)** If receiver is not registered on the Orange platform or another MFS system
  + The InterOp Add-On will send a request to the HPS system to provide the status of the default wallet of the receiver.
    - HPS validates the status of received mobile number and send back response to InterOp Add-On system.
    - Basis response, the InterOp Add-On sends a request to the mobiquity platform
    - mobiquity will not process the request and mark the transaction as failed.
  + If Other MFS customer go to any Orange MFS Merchant for merchant payment- Other MFS system will validate all above scenarios in there MFS system and process the transaction
* **(Scenario-6)** In case where Merchant is registered in Orange MFS and has set their default wallet as Orange.
  + The HPS system will forward the request to the InterOp Add-On system.
  + The InterOp Add-On system will initiate the request on mobiquity platform.
    - mobiquity will validate applicable business rules.
    - On successful validation, HPS pool wallet should be debited and receiver’s Orange wallet would be credited.
  + mobiquity should send back transaction response to InterOp Add-On system.
  + InterOp Add-On system should send back transaction response to HPS, which HPS should forward to requester MFS system
  + mobiquity will also send the transaction notification on receiver mobile number

#### Notification

* No impact on SMS notifications, P2P transfer notification will be sent.
* InterOp will send the SMS notification only

### Merchant payment- Pull (initiated by Merchant- two step)

Following is the approach proposed and business rules:

* In Merchant initiated merchant payment, Merchant will launch the Orange mobile app/USSD & select the merchant payment option.
  + The access channel is outside the scope of Mahindra Comviva.
* Merchant enters the customer’s mobile number, enter amount for payment and confirm transaction with transaction PIN.
* The request is sent from the access channel to the InterOp Add-On.
  + The InterOp Add-On system checks the registration status and the default wallet against the customer’s mobile number.
  + Basis the registration status and the default wallet set, the InterOp Add-On initiates a specific request to the mobiquity platform as defined in the scenarios below.
* In case the customer has not opted for the interoperability service
  + The registration details would be fetched from the mobiquity system through user enquiry.
  + The default wallet details would be fetched from HPS using the customer status consultation service.
* For all ‘On US’ cases transaction should be processed in synchronous mode between the channels and InterOp system. Channel should wait for response from InterOp Add on. In these cases Tango system will be responsible to send the SMS notifications. Tango should be responsible to send SMS. If the response from Tango is timed out, no Notification API will be sent by InterOp and only the Tango SMS will go. This will be applicable for success and fail cases.
* For all ‘Off US’ cases transaction should be processed in asynchronous mode between the channels and InterOp system and InterOp will be responsible to send the SMS notifications.
* InterOp should send a ‘GetLang’ request to Tango system to fetch the user type information of the received mobile number since InterOp should not store the user type details for default wallet. This check is applicable in both cases where transaction is initiated by Orange users and transaction request is coming from HPS.
* System should allow to configure different service charge rules for ‘On Us’ and ‘Off Us’ transactions.
* At HPS side all business rules for Merchant payment- push type will be same as P2P transfer. Refer the P2P transfer sequence flow for merchant payment –push type service.
* SMS notification should display the post balance after successful transaction execution. For On-US transaction Tango should send the user’s post balance after transaction processing. In case of off-US transactions, InterOp should send a user enquiry request to Tango system to fetch the user’s balance.

Refer to below table for each scenario execution.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNO. | Merchant payee - Orange Registered | Customer payer- Orange Registered | Customer Default Wallet-Orange | Customer Default Wallet – Other MFS | Service Applicable |
| 1 | Y | Y | Y | - | On-Us –Merchant payment 2 step |
| 2 | Y | Y | N | N | On-Us – Merchant payment 2 step |
| 3 | Y | Y | N | Y | Off us – Merchant payment 2 step via HPS |
| 4 | Y | N | - | Y | Off us – Merchant payment 2step via HPS |
| 5 | Y | N | - | N | Transaction Fail |
| 6 | N | Y ( also registered in other MFS) | Y |  | Other MFS system send merchant payment request to HPS & HPS forward the request to InterOp Add-On Orange system |

* **(Scenerio-1)** If customer is registered on Orange and set their Orange wallet as Default on HPS, mobiquity will treat this transaction as on us**.**
  + InterOp sends the request to the mobiquity platform.
  + mobiquity validates merchant payment transaction business rules.
    - If all rules are validates successfully, mobiquity will send the confirmation request to customer
    - Customer will receive USSD push where he/she can confirm/reject the request
  + If customer confirms the transaction, mobiquity debits the customer wallet and credited into merchant’s Orange wallet.
  + Request will not be sent to HPS switch.
  + mobiquity will notify the sender and receiver mobile number.

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* **(Scenerio-2)** If customer is registered on Orange platform but is not registered on HPS
  + The InterOp Add-On will send a request to the HPS system to provide the status of the default wallet of the customer.
    - HPS validates the status of received customer mobile number and send back response to InterOp Add-On system
    - HPS responds that the customer is not registered with HPS
    - In case of response time out, InterOp should send error message to merchant
  + Basis response, the InterOp Add-On sends a request to the mobiquity platform.
  + mobiquity will process the on-us merchant payment transaction.
  + Refer steps for scenario -1.
    - mobiquity will send the notification on sender and receiver mobile number

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* **(Scenerio-3)** If customer is registered on HPS with another MFS system
  + In this case mobiquity will process the transaction as off us merchant payment.
  + The InterOp Add-On will send a request to the HPS system to provide the status of the default wallet of the customer.
    - HPS validates the status of received mobile number and send back response to InterOp Add-On system.
    - Basis response, the InterOp Add-On sends a request to the mobiquity platform
  + mobiquity process the request as per received response
  + mobiquity validates applicable business rules.
    - On successful validation of business rules mobiquity sends a merchant payment request to InterOp Add-On system.
    - The InterOp Add-On system sends the request to the HPS.
    - HPS sends the transfer request to other MFS system where customer has registered wallet.
  + Other MFS system should process the merchant payment request and send the transaction confirmation request on customer mobile number.
    - If customer confirms the transaction, Other MFS system should debit the customer wallet and send back response to HPS.
    - Based on the other MFS response, HPS forward the response to Orange InterOp Add-On system.
    - InterOp Add-On system sends the response to the mobiquity system.
      * Based on success response from HPS, mobiquity debit the HPS pool wallet and credit into merchant wallet and mark the transaction as successful and notify the merchant.
      * If received response is failed mobiquity will mark the transaction as fail and notify the merchant.
      * If response is timed out, mobiquity will keep the transaction as ambiguous. Settlement of such transaction will be done by end of the day with HPS or through HPS claim management portal

Refer the below table for exception management.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SNO. | Receiver MFS | HPS | Receiver MFS | Final transaction status |
| 1. | Request initiated | Response Timed out/ no response | Response Timed out | Sender MFS=Mark txn success/fail based on customer response  HPS=Txn failed Receiver MFS=Txn failed |

* For Pull based merchant payment, response timeout is configurable at HPS. Usually at HPS it is configured as 2 minute. If receiver MFS should not receive response with in configured time, transaction should be marked as failed and notify the merchant for final transaction status.
* If HPS does not receive the response from sender MFS with in defined time, HPS should send a transaction reversal request to sender MFS. Based on reversal request sender MFS should reverse the transaction at their end. If sender MFS is not reachable to receive reversal request, HPS will mark the transaction as failed.

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* **(Scenerio-4)** If customer is registered in another MFS system & set other MFS wallet as default on HPS
  + mobiquity will process this transaction as off us transaction.
  + Transaction will be processed same as Scenario -3.

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* (**Scenerio-5)** If customer is not registered on the Orange platform or another MFS system
  + The InterOp Add-On will send a request to the HPS system to provide the status of the default wallet of the customer.
    - HPS validates the status of received mobile number and send back response to InterOp Add-On system.
    - Basis response, the InterOp Add-On sends a request to the mobiquity platform
    - mobiquity will not process the request and mark the transaction as failed.
  + If Other MFS customer go to any Orange MFS Merchant for merchant payment- Other MFS system will validate all above scenarios in their MFS system and process the transaction

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* **(Scenario-6)** If Other MFS merchant initiate a merchant payment for a customer who has set their default wallet as Orange.
  + The HPS system will forward the request to the InterOp Add-On system.
  + The InterOp Add-On system will initiate the request on mobiquity platform.
    - mobiquity will validate applicable business rules.
    - On successful validation, the mobiquity system will push a notification to the customer to approve/reject the request.
    - In case of customer’s approval, customer’s Orange wallet is debited and the HPS pool wallet would be credited.
    - In case the customer rejects, the transaction is failed.
  + mobiquity should send back transaction response to InterOp Add-On system.
  + InterOp Add-On system should send back transaction response to HPS, which HPS should forward to requester MFS system
  + mobiquity will also send the transaction notification on receiver mobile number in case of success transaction.

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#### Wireframes / USSD Flow

* NA

#### Notification

* InterOp Add on should send the SMS notification only.

### Transaction correction management

Following is the approach proposed and the business rules:

* To accept the refusal of P2P transfer, mobiquity Transaction correction feature should be used. Only those transactions can be reversed which are marked as successful at mobiquity side. Dispute resolution for transactions should be done outside mobiquity system,
* Following is the proposed approach and business rules:
* Back office user should fetch the transaction details based on mobiquity transaction ID or other filter criteria.
* If transaction is successful and reversal is not yet done, admin user can initiate the reversal transaction request.
* To reverse the transaction at HPS and other MFS member, mobiquity should send this reversal transaction request in upcoming LIS file in required format. Refer the LIS specifications for each type of transaction reversal request format.
* Once reversal transaction updated response is received in the HPS LIS file then only reversal initiated transaction should be approved. Based on approval actual financial impact should be done (debit/credit of payer/payee of actual transaction)
* Below table summarize the handling of **Dispute management** cases for P2P transfer:

|  |  |  |  |
| --- | --- | --- | --- |
| SNO. | Dispute transaction cases | Dispute request received from | Handling of dispute transaction |
| 1 | Refusal of P2P transfer where mobiquity was sender | received in HPS LIS file | Mobiquity should process single step transaction correction for such cases and reverse the transaction. Sender of actual transaction should be credited back and HPS pool wallet should be debited and system should also notify the sender for refusal. |
| 2 | Refusal of P2P transfer where mobiquity was receiver | Receiver of transaction contact customer care for transaction refusal | Customer care should initiate the reversal of the P2P transfer using transaction correction feature.  During EOD LIS file, mobiquity should send the P2P refusal record in member LIS file to HPS for processing reversal at sender side. |

### Clearing, settlement and adjustment

For clearing and settlement between HPS and all HPS MFS members all parties will generate their EOD ‘LIS’ file in HPS defined file format. Following are the details to generate and process the LIS files.

**LIS file from HPS to MFS members**

* Every day HPS generate an EOD flat ‘LIS’ for each integrated MFS member which contains transactions executed through HPS for that member in ‘n-1’ day. Like
  + P2P transfer Transactions where mobiquity is sender
  + P2P transfer where mobiquity is receiver
* HPS LIS file will also contain following reversal transaction request which needs to process at Member MFS based on dispute raised by other MFS members.
  + Refusal of P2P transfer where mobiquity was sender
* For received P2P refusal transactions in LIS file, mobiquity should process that transaction with transaction correction.
* If a MFS member is both sender and receiver of the request from/to HPS, that member will receive a single LIS file which should contain all the transactions where mobiquity users’ account are debited and credited
* Refer LIS specifications document for more details on file format and parameter level details
* 
* HPS generate LIS files from Monday to Saturday, only "business days" and Saturday (excluding public holidays). File generated on Monday includes all the transactions executed from last Friday to Sunday. If the day is last business day of the month or last business day of the year HPS generate the end of the month LIS and end of the year LIS
* HPS generate and send the LIS file even if it contains no message of clearing, settlement or information (empty file, only the header and end of the file appear)
* File sent by HPS should be transferred to mobiquity via CFT at defined mobiquity server location.
* Mobiquity should create a schedule which runs daily at defined time to read the server location and process the received LIS file
* This LIS file will have two sections:
  1. **FS**: This section contains the summary of all transactions mentioned in the second section (FE). One record in this section is called a transaction code (TC).
  2. **FE**: This section contains the transaction records and each record contains complete transactions details, each record having a 256-byte length. One record in this section of LIS is called a transaction component record (TCR)
* Mobiquity should parse the file, validate each record and process each record based on the transaction code mentioned. Each record in LIS is of defined length of 256
* Before processing the file mobiquity should perform file validation steps (Refer LIS specs). If any of the record in received LIS file failed due to any integrity validation failure, mobiquity should reject the complete file. At the end of file treatment, mobiquity should generate the log report listing all rejections and their reasons. This log file should be transferred to HPS. HPS will correct the file and resubmit it to the mobiquity for processing. If there is any business check failure at mobiquity side for any of the received record in LIS file, such failures should be handled or resolved with in mobiquity and will not be reported to HPS.
* Once all validations are executed successfully, mobiquity should process the transactions based on the received information in LIS file.
* To update the status of ambiguous transactions at mobiquity system refer **[exception management](#_Transactions_exception_management)** table

**LIS from MFS member to HPS:**

* Similar to HPS LIS file, each MFS member should generate their daily file in defined format and transfer it to HPS through defined transfer process
* MFS member/mobiquity should generate and send the file even if there is no information to be sent to HPS. File should be empty with header and footer details
* MFS member file should be transferred to HPS via CFT
* Before processing the file, HPS validates the received file. If any of the record in member MFS file fails due to any validation failure, HPS should reject the complete file. At the end of the file validation, HPS should generate the log report and send it to the member MFS.
* Member MFS should read the received log report and correct the previous file and send the corrected file in next cycle.
* Member MFS file should contains following transaction records:
  + P2P receive refusal transaction (where mobiquity is receiver and user want to revert the transaction)
* If there is no refusal transaction and all HPS LIS file transactions are consolidated successfully, member MFS LIS file should be empty. It should only contain the header of the LIS file.

## Important Notes & Assumptions

* This section lists all the important points that the author wants the reader to take note & also which the author has assumed to be true & accordingly have proposed the solution against the requirement.
* SMS to be sent from InterOp for the Off-Us transactions and On-Us transactions notifications will be handled through Tango system. Sending SMS from Tango or InterOp should be configurable. Block SMS tag will be used at the Tango system to stop sending SMS from Tango

## Dependencies on Orange

This section lists all those points, against which inputs are required from the client & without which final delivery cannot be made.

* Orange should finalize the scope of HPS for phase 1.
* Finalize the flow and business rules for HPS transactions.
* Finalize the global reporting requirements.

## Out of Scope & Risks

This section lists all those points, which may have been asked as part of requirement but has not been considered as part of deliverable scope. This section also lists any risks that may have foreseen during analysis.

* Any service apart from the services mentioned above in the FSD would be out of scope.
* All the access channels and customizations to any access channels are out of scope.

Sign offs

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| Position | Name | Signature | Date of signature |
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