Faster Payments QIAT

Proposer: **SwapsTech**

February 21, 2017

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Faster Payments Task Force Proposal
Booshan Rengachari

April 30, 2016
Submitted by: Booshan Rengachari, SwapsTech
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EXECUTIVE SUMMARY

SwapsTech is an emerging leader in providing payment solutions, and has years of experience in both domestic and cross border payments. The author, Booshan Rengachari is the President and CEO of SwapsTech, an Architect and Engineer by profession, and has built and supported payment systems in small, medium and larger financial institutions. The author proposes an end-end payment solution called as “STARNET” that is simple, secure, fast and supports cross border payments.

The author identifies the following issues in the current payment system(s).

1. ACH method of payment has enabled the automation of debits and credits directly from/to the bank account, without the need to visit a branch or send a check. However, this has created a bigger security issue, as the payee’s account details are shared with a third party (ACH agent), and the account owner has no control over how much amount is debited and when. In reality, the account owner owns the cash, but a third party can take money from his account without his knowledge (even though he has authorized earlier). When the ACH agent debits an incorrect amount from the account, the owner of the account who might discover it several days later, will have to call the ACH agent and ask for the reversal, wasting time and making the account owner unsafe about his assets at the bank [Banks have created bandages to address this issue in the name of insurance and etc., but the core security issue of the account has never been addressed.] ACH is 1974 technology, and it is time to address the issues and create a new network.

2. With the bank account number along with routing number easily exposed, anyone can print a check and deposit it. There is an international fraud network, and several fraudsters heavily relying on this security leak, and has created heavy losses to consumers and financial institutions.

3. Credit and Debit cards are another insecure payment method. With the growth of online business, a fraudster is only required to know the card details to take money out of the card. The owner of the account has no authority over such transactions.

4. When an individual or an entity change their Bank Account, get a new Credit/Debit Card Account or if the Card expires, all the vendors who try to access these accounts may be declined for funds. Now the individual or the entity has to update all the vendor systems which is an overhead for the consumers and the wastage of human time.

5. Consumers receive all the bills, delinquent notices, and collections via paper emails (author acknowledges that there are automated bill services available, but these are
available only for larger corporates – Eg. AT&T, Time Warner, etc.). Consumer has to keep track of all these bills and pay on time. The system must be able to support all size of businesses to send the bills and reminders to customers, and enable prompt/faster payments.

6. When the businesses send an invoice to another business, it goes thru several departments, and many times they get delayed. The system must help support tracking of these payment requests so the business sending invoice will know the status of the invoice.

7. Fraud monitoring has been heavily localized at each financial institute, and there is no sharing of fraud information across the financial institutions. Even though FIs are reporting the transactions to federal agency, it may be too late to discover a fraudulent transaction, as a fraudster can operate multiple accounts across different FIs, and avoid being flagged for some fraudulent transactional pattern. Today each FI has its own, localized screening system and there is no collaboration among the FIs, which leads to the money leaving the country or being used before detecting the pattern. The network/system must support sharing and detection of fraudsters, fraudulent transactional patterns almost at real time, before the money leaves the network.

8. All international payments travel through many intermediary banks, increasing the cost of the transaction, and delaying the payments. The system must reduce intermediaries and increase the speed of cross-border payments.

9. Each country has its own regulations for receiving cross border payments. Due to varying nature of these regulations, the institute that forgets to send certain required information along with the payment, will either face the delay in the processing of payment or receive the funds back. The system must help capture all the required information upfront to reduce processing delay.

10. Each financial institute that wishes to support payment in certain currency, is required to have an account in that currency with another global or foreign bank. This creates too much of overhead and cost to small and mid-sized banks, making them unable to support their client base at a reasonable cost or fees. As the banks are regulated by US agencies, the network must help offer foreign currency accounts to enable transacting foreign currencies.
11. A large portion of international payments from USA are delivered in US Dollars. So the US banks are letting go of their Foreign Exchange revenue, to other foreign banks. The network created by US must help generate more revenue for US banks.

12. The network/system must be able to provide status of the cross-border payments almost at real time to sender, sender institution and the beneficiary of funds.

The solution should capture the details of the payment, weather the payment is made at a retail store or electronically. The consumers have to maintain all the bills and receipts for accounting and audit purposes. This is not only inefficient, but also harmful to earth and the author wants to leave a green foot print by not wasting papers. The system must be able to capture the details of the underlying payment and support storing them electronically.

13. Today the card payment is dominated by two major networks, and the businesses pay a heavy fee for accepting card payments. The network must encourage the participation of multiple players and help reduce the transaction fees.

The proposed solution addresses the above problems with the following fundamental requirements and concepts:

1. Owner of the account must have 100% control and authority over how much amount needs to be paid, how he wants to pay and when he wants to pay. No entity or vendor will have the right to debit a customer’s account.

2. STAR Account ID (STAR ACCOUNT) which is virtual and secure will be used in place of real accounts. These STAR ACCOUNTs are like firewalls, and will only help an account owner receive the funds. Using these IDs, authorized entity can only validate the owner of the account, but will never be able to know the real cash or credit account number and other details.

3. STAR Account could either be a CASH account or a Credit account.

4. For business STAR ACCOUNTS, further sub-account (cost center) codes can be added, so the payment can be routed to appropriate department personals for approvals.

5. An individual or an entity must register STAR ACCOUNT via his/her/its Provider while opening a new account (visible only to owner but not to others). All the accounts with the Provider can be assigned a nick name, or simply a number (Eg. PRIMEBIZ, ACCNO1, etc). The owner must identify the bank account where he wants to receive incoming
payments (hereafter called Global Instructions – GIN, aka Standard Settlement Instructions). These instructions are maintained in a central GIN repository and will be used for lookup. These registries can be changed if the owner of STAR ACCOUNT wants to receive the funds to a different account, without a need to let the sender aware of the change.

6. An individual or an entity can provide this STAR ACCOUNT (with optional Account Nick Name) to receive the funds into this account.

7. When payment request is received for a STAR ACCOUNT, the network will check with the fraud engine (that detects fraudulent money movement patterns) to make sure it is good to go. Finally, network debits the sender bank’s account in the network, credits receiver bank’s account in the network, and informs both sender and receiver banks about the finality of the payment – at this point sender and receiver banks are responsible to post the credit/debit in their client’s account.

8. An individual or an entity can also request fund from a STAR ACCOUNT, in which case, the network will look up the STAR ACCOUNT owner’s Provider and sends the payment request to the Provider. If the Provider is not registered, STARNET returns an error to the requestor that the account can’t receive payment requests. Provider then alerts the Payer about the Payment Request via Mobile App and/or Online Portal.

9. Upon receipt of the payment request, STAR ACCOUNT owner reviews the request, and approves the payment. After authorization by account owner, Payer’s Provider will screen the sender and receiver against the global database of prohibited lists. Then it will release the fund to STARNET, and STARNET calls the receiver’s Provider to receive the funds, and updates both the sender and receiver about the status. Dual authorization (for corporate clients) can be supported the same way – Account owner’s institution will not release the funds till all the required parties have approved. However, each time an authorized user approves the fund, sender institution will notify STARNET about the status, which then sends the status to receiver of the funds.

10. In order to process cross border (International) payments, STARNET will establish connections to other FASTER payment networks in various countries. When the country doesn’t or can’t support faster payment, then the money will follow the standard route and speed; the sending institution will still enjoy the security available for the sender and sending institution, but not the speed, real-time updates, validations, etc.
11. For International Transfers, the Payer’s Provider is required to have foreign currency accounts (FCA) established in STARNET. Funding of FCA will be done when the sending institute buys foreign currency and the seller institute will deposit the foreign currency in STARNET FCA.

12. Upon receipt of payment request from sending institution, STARNET will contact the partner institute in the foreign network, and will request it to deliver the funds to the beneficiary. At this time, partner institute will verify if the request contains all the required information, including the regulatory information required in each country, and will accept or reject the request in real-time. Upon acceptance, STARNET will be notified, and hence the sender of the funds. Upon final delivery of the payment by partner institute, another notification will be delivered to STARNET, and hence the sender of the funds.
## USE CASE COVERAGE

Supported Use Case Coverage Summary

<table>
<thead>
<tr>
<th>Use case</th>
<th>Supported (Y/N)</th>
<th>Cross-border (Y/N)</th>
<th>Examples of payments supported</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business to Business (B2B)</td>
<td>Y</td>
<td>Y</td>
<td>The solution supports B2B payments, such as the payment of an invoice for the services or products, payroll taxes, unemployment taxes and other government taxes. The payment could either be initiated by the sender or receiver of the funds, however, the sender of the funds needs to be approve the payment when initiated by receiver of the funds.</td>
<td>Businesses can also provide maker-checker functions.</td>
</tr>
<tr>
<td>Business to Person (B2P)</td>
<td>Y</td>
<td>Y</td>
<td>The solution supports B2P payments, such as payrolls, social security, government pensions, tax-returns, refunds, etc.</td>
<td>Businesses can either send one payment or bulk payments.</td>
</tr>
<tr>
<td>Person to Business (P2B)</td>
<td>Y</td>
<td>Y</td>
<td>The solution supports P2B payments, such as paying utility bills (electricity, cable, telephone, etc.), rent payments, loan payments (mortgage, car, etc.), insurance, tax payments and other bill payments.</td>
<td>When the payment is initiated by the business, it will include the details of the bills and are stored in digital format for future reference.</td>
</tr>
<tr>
<td>Person to Person (P2P)</td>
<td>Y</td>
<td>Y</td>
<td>The solution supports P2P payments, such as personal loans, funds for children, fund transfers across different personal accounts, etc.</td>
<td></td>
</tr>
</tbody>
</table>
Cross-border Use Case Coverage

<table>
<thead>
<tr>
<th>Use Case</th>
<th>Non-US Corridor(s) and Systems</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business to Business (B2B)</td>
<td>The solution should seamlessly interface with any payment network that meets certain minimum criteria in order to support tracking of payment, real-time updates, validation of account, etc.</td>
<td>If the network doesn’t meet the criteria, then the payment will be routed via standard route. Sender’s financial institution must either establish FCA in STARNET and fund the FCA, or STARNET will buy the funds or designate another financial institution to fund the foreign currency.</td>
</tr>
<tr>
<td>Business to Person (B2P)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person to Business (P2B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person to Person (P2P)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Proposal Assumptions

1. This solution assumes that this solution will be built with the interest of consumers and end users in mind, and there won’t be parties who will lobby for their commercial benefits.

2. This solution lays out the principles, features, process flows, message flows, responsibilities and liabilities, but has not created a complete participant rules. There are several existing payment rules, regulations and networks available. This solution assumes that the legal framework will be built only after the approval of the solution.

3. This solution assumes that the industry body will help build the solution, and provide all the required support including financial support, and SwapsTech will take the lead in the development and implementation of the solution.

4. This solution assumes a governing body and advisory body consisting of all parties and stakeholders will be created.

5. This solution assumes that effort will be taken to create a global payment networking connecting the regional payment networks in all countries.

6. This solution assumes that messaging standards will be developed to suit to the solution’s requirements, and may adopt existing standards only if it meets the requirements, and the requirements will not be compromised to suit to existing standards.

7. This solution assumes that all provisions and efforts will be made to support older payment methods, all type of end-users, those will not hold back the innovation that is very much required in today’s market.

8. This solution assumes that “Blockchain” may be used as a general ledger, but that will not be public and will be restricted only within the network.
PART A: DETAILED END-TO-END PAYMENTS FLOW DESCRIPTION

Part A, Section 1: Solution Description

1. Authentication

Payer’s Provider will be responsible to authenticate the user when the payment is initiated by Payer, and Payee’s Provider will be responsible to authenticate the user when the payment is initiated by Payee. The responsibility of authentication lies within the Provider’s access points, such Smart Phone, Online Portal, Call Center, etc. Upon successful authentication, the financial institution must know who the user is and what is the user’s STAR ACCOUNT is. The type of authentication that can be supported by financial institution may include one or more of, but not limited to, “Finger Print”, “Login/Password”, “Two Factor Authentication”, “Face Recognition”, “Voice Recognition”, etc.

This enables the Provider continue to use their App or Portal, and existing authentication methods, to authenticate the user and provide additional faster payment service on top of other existing financial services.

The Provider will have a device/software installed in Provider’s network and will be connected to STARNET via Secure VPN connection, and the STARNET will authenticate Provider based on the security certificates and login/password credentials established between Provider and STARNET. All the data in transit and at rest will be encrypted using 256-bit encryption.

2. Initiation

Initiation of the payment can be either started by the Payer or the Payee. In both cases, both the parties are required to have an account with their Provider. Initiation of payment can get started from an online portal, smart phone device, financial institution’s branch or kiosk, customer service (or call) center, File Upload for Bulk Payment, or via API.

The payment request must have the following information available in order to initiate a payment.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Mandatory/Optional</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payer STAR Account</td>
<td>Mandatory</td>
<td>Email/Phone/or Other registered ID.</td>
</tr>
<tr>
<td>Payee STAR Account</td>
<td>Mandatory</td>
<td>Email/Phone/or Other registered ID.</td>
</tr>
<tr>
<td>Payer Name</td>
<td>Mandatory</td>
<td>To validate Payer’s STAR ACCOUNT.</td>
</tr>
<tr>
<td><strong>Payee Name</strong></td>
<td><strong>Mandatory</strong></td>
<td><strong>To validate Payee’s STAR ACCOUNT.</strong></td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td><strong>Payment Amount</strong></td>
<td><strong>Mandatory</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Payment Currency</strong></td>
<td><strong>Mandatory</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Purpose of Payment</strong></td>
<td><strong>Mandatory</strong></td>
<td><strong>Can contain Invoice Number, Purchase Order, etc.</strong></td>
</tr>
<tr>
<td><strong>Fees Paid By</strong></td>
<td><strong>Mandatory</strong></td>
<td><strong>Payer/Payee/Shared</strong></td>
</tr>
<tr>
<td><strong>Due Date</strong></td>
<td><strong>Required if initiated by Payee</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Document Reference</strong></td>
<td><strong>Optional</strong></td>
<td><strong>This will refer to Invoice No or Bill No or other Ref No.</strong></td>
</tr>
<tr>
<td><strong>Details of Bill</strong></td>
<td><strong>Not Required when initiated by Payer.</strong></td>
<td><strong>Can have one or more records.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Optional when initiated by Business Payee who can include the details of the bill.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Description</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Unit Price</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>No of Units</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Start Date</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>End Date</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Price</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Payee Country Required Attributes</strong></td>
<td><strong>Required only if the Payee is outside of US.</strong></td>
<td><strong>Each country has their own requirements to process incoming International payments.</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Example: Purpose of Payment, National Bank ID, Person/Business National ID, etc.</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>This field is required weather “Convert to Payee Currency” is set or not.</strong></td>
</tr>
<tr>
<td><strong>Key</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Value</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Documents</strong></td>
<td><strong>Optional</strong></td>
<td><strong>Any electronic documents that needs to be attached. This can include Invoice, Purchase Order, or other documents that will help Payee or Payee Bank or Payee’s Government Agents.</strong></td>
</tr>
</tbody>
</table>

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### Document

<table>
<thead>
<tr>
<th><strong>Submitted By</strong></th>
<th><strong>Read Only</strong></th>
<th><strong>Captured by the system. It will have Payer or Payee Name.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Approved By</strong></td>
<td><strong>Read Only</strong></td>
<td><strong>Captured by the system. It will have Payer’s Approver Name if initiated by Payee. If the request is initiated by Payer, and if this is business, then another Approver is required to authorize the payment.</strong></td>
</tr>
</tbody>
</table>

### Initiation by a Payer

Payer can initiate the payment using the following methods.

1. From an Online Portal
2. From a Smart Phone Device
3. By visiting Branch or Kiosk
4. By calling Customer Service Center
5. By uploading a File containing batches of payment records (only for businesses).
6. By calling a secure API to initiate payment (only for businesses).

When the payment is initiated by Payer, it must have the following attributes captured.

<table>
<thead>
<tr>
<th><strong>Field Name</strong></th>
<th><strong>Mandatory/Optional</strong></th>
<th><strong>Notes</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Payee STAR Account</td>
<td>Mandatory</td>
<td>Email/Phone/or Other registered ID.</td>
</tr>
<tr>
<td>Payee Name</td>
<td>Mandatory</td>
<td>To validate Payee’s STAR ACCOUNT.</td>
</tr>
<tr>
<td>Payment Amount</td>
<td>Mandatory</td>
<td>Email/Phone/or Other registered ID.</td>
</tr>
<tr>
<td>Payment Currency</td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>Purpose of Payment</td>
<td>Mandatory</td>
<td>Can contain Invoice Number, Purchase Order, etc.</td>
</tr>
<tr>
<td>Fees Paid By</td>
<td>Mandatory</td>
<td>Payer/Payee/Shared</td>
</tr>
<tr>
<td>Document Reference</td>
<td>Optional</td>
<td>This will refer to Invoice No or Bill No or other Ref No.</td>
</tr>
<tr>
<td>Payee Country Required Attributes</td>
<td>Required only if the Payee is outside of US.</td>
<td>Each country has their own requirements to process incoming International payments. Example: Purpose of Payment, National Bank ID, Person/Business National ID, etc.</td>
</tr>
</tbody>
</table>
This field is required weather “Convert to Payee Currency” is set or not.

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documents</td>
<td>Optional</td>
<td>Any electronic documents that needs to be attached. This can include Invoice, Purchase Order, or other documents that will help Payee or Payee Bank or Payee’s Government Agents.</td>
</tr>
</tbody>
</table>

**Initiation by Payee**
Payee can initiate the payment using the following methods.
1. From an Online Portal
2. From a Smart Phone Device
3. By visiting Branch or Kiosk
4. By calling Customer Service Center
5. By uploading a File containing batches of payment records (not for consumers).
6. By calling a secure API to initiate payment (not for consumers).

When the payment is initiated by Payee, the request must contain the following attributes.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Mandatory/Optional</th>
<th>Notes</th>
</tr>
</thead>
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<td>Payer STAR Account</td>
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<td>Email/Phone/or Other registered ID.</td>
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<tr>
<td>Payee STAR Account</td>
<td>Mandatory</td>
<td>Email/Phone/or Other registered ID.</td>
</tr>
<tr>
<td>Payer Name</td>
<td>Mandatory</td>
<td>To validate Payer’s STAR ACCOUNT.</td>
</tr>
<tr>
<td>Payee Name</td>
<td>Mandatory</td>
<td>To validate Payee’s STAR ACCOUNT.</td>
</tr>
<tr>
<td>Payment Amount</td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>Payment Currency</td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>Purpose of Payment</td>
<td>Mandatory</td>
<td>Ex. “Professional Services”, “Legal Services”, etc.</td>
</tr>
<tr>
<td>Fees Paid By</td>
<td>Mandatory</td>
<td>Payer/Payee/Shared</td>
</tr>
<tr>
<td>Due Date</td>
<td>Required if initiated by Payee</td>
<td></td>
</tr>
<tr>
<td>Document Reference</td>
<td>Optional</td>
<td>This will refer to Invoice No or Bill No or other Ref No.</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>Details of Bill</td>
<td>Optional when initiated by Business Payee who can include the details of the bill.</td>
<td>Can have one or more records of the following fields.</td>
</tr>
<tr>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Price</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No of Units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start Date</td>
<td></td>
<td></td>
</tr>
<tr>
<td>End Date</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Price</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Payee Country Required Attributes</td>
<td>Required only if the Payee is outside of US.</td>
<td>Each country has their own requirements to process incoming International payments. Example: Purpose of Payment, National Bank ID, Person/Business National ID, etc.</td>
</tr>
<tr>
<td>Key</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documents</td>
<td>Optional</td>
<td>Any electronic documents that needs to be attached. This can include Invoice, Purchase Order, or other documents that will help Payee or Payee Bank or Payee’s Government Agents.</td>
</tr>
<tr>
<td>Document Submitted By</td>
<td>Read Only</td>
<td>Payee’s User Name</td>
</tr>
</tbody>
</table>

If the Payment Currency is in Foreign Currency, and the Payment is initiated by Payer, Payer’s provider will provide a Conversion Rate to Payer along with any applicable fees, and the Payer will have an opportunity to review the exchange rate, accept/reject the rate.

Upon submission of Payment by Authenticated User to its Provider, Provider’s authentication by STARNET, Provider will be able to submit the payment request to STARNET. Upon submission of the request, STARNET will register the request and return a Payment Tracker ID to the Provider.
After registering the request, STARNET will validate Payee’s STAR ACCOUNT and conduct a lookup in GIN Repository to identify Payee’s Provider. If Payee’s Provider is not found, Payment Status will be updated to “Payee Provider Not Found” and a notification of the status will be sent to initiator. If Payee’s Provider is found, a notification will be sent to both Payer Provider and Payee Provider along with the description, payer name, payee name, and with status “Request Received”. Payer Provider and Payee Provider will then send alert notifications (to Mobile App, Email or Text based on the preferences) to Payer and Payee.

3. **Payer Authorization**

Payer’s Provider must facilitate the authorization of the transaction. The solution doesn’t recommend pre-authorization (or auto authorization) as the fundamental concept behind this proposal is that, not a penny leaves Payer’s account without its approval. However, automated pre-authorization rules can be setup and enabled by each Provider, if desired.

For P2P or P2B payments, when initiated by Payer, authorization is not required, as the user who initiates the payment is an individual. However, when the payment request from an individual is initiated by Payee, then this payment needs to be authorized by Payer.

For all B2P and B2B payments, when initiated by Payer, a second user needs to review and approve all the payments. When the Payer is a business, and when the payment is initiated by Payee, the payment request alerts are sent to the owners of the account or cost center. One of the user must first accept, verify and process the payment; then a second user is required to authorize/release the payment.

When a Payment is initiated by Payee, and if the Payment Currency is Foreign Currency, Payer’s provider will provide a Conversion Rate to Payer along with any applicable fees, and the Payer will have an opportunity to review the exchange rate, applicable fees, accept/reject the rate. This will be available only for the first user in case of a B2P or B2B payments, and the second user will only have an opportunity to review and authorize the payment.

The approval and/or authorization of the payment can be conducted in Mobile App, Online Portal, Customer Service Center, or via API.

When the Payment along with any applicable fee is approved or authorized (or auto-authorized when authorization is not required), the status of the Payment is updated and the alert is sent to both Payer’s Provider and Payee’s Provider. All alerts and notifications to an individual or businesses are handled by their Provider. These alerts can either in the form of text, email or push notifications to a Mobile App.
All the payments will have a minimum of 30 minutes hold time or as configured by the business or an Individual. Payer will be able to cancel or make any changes during this hold period, via Online Portal or Mobile App or by calling Customer Service Center.

4. Approval by the Payer’s Provider

Upon authorization by Payer, Payer’s Provider must check for available balance, and put a hold on that account for the requested payment amount.

After posting the hold on the account, Payer’s Provider will conduct the following checks

1. Screening of Payer and Payee against the Sanctioned Name Lists.
2. Screening against Sanctioned Country Lists for cross border payments.

Upon a Hit against the Sanctioned Name Lists, or Country Lists, a compliance officer appointed by Payer’s Provider, must review and approve/reject the payment. Any approval or rejection or hold decision must be made within 30 minutes, or the Payer’s Provider must be penalized for the delay (Payer’s Provider must take an action even if the decision is to hold). If the decision is to hold the payment, STARNET must be notified about the possible delay in the payment. STARNET will notify Payee Provider about the possible delay but will not know or notify the reason of suspect alert.

Upon successful completion of screening, Payer’s Provider can auto release the payments below certain pre-configured limit (Ex. USD 10,000), or have an operator review and release the payments above the limit.

Before the release of the Payment by Payer’s Provider, Payer’s Provider shall ensure there is enough fund or credit available in its Account at STARNET. The STARNET Plugin at the Provider’s network will then send the request to process the payment to STARNET.

5. Clearing & Settlement

Clearing of funds between Payer’s Provider and Payee’s Provider, and the Debit in the Payer Account and the Credit in the Payee Account will be handled in this phase, all in real-time.

During this phase, STARNET will run a “Fraud” check for fraudulent pattern of transactions by Payer, to Payer, by Payee, to Payee, initiated by any institution, against the past transactions. This method of running fraud checks against the global list of transaction is a new concept, complex and takes a lot of time to build the rules and software. Hence the author recommends that this feature to be built in parallel and this feature should not hold back the rollout of faster payment network.
Note: The responsibility to make a decision on the fraud check may be assigned to Payer’s Provider, but STARNET will be responsible to providing all matching patterns to the Provider, as it has the global and historical transactional data by Payer, to Payer, by Payee and to Payee.

After fraud check, STARNET will perform the following steps:

1. Call Payer Provider’s STARNET plugin to debit Payer’s account. This step ensures that Payer has good balance and the payment can proceed. Payer’s Provider can take settlement risk with the Payee by providing credit line, overdraft, but that is entirely up to Payer’s Provider.

2. After confirmation of debit,
   a. Debit Payer’s Provider Account held at STARNET.
   b. Credit Payee’s Provider Account held at STARNET.
   c. Call Payee Provider’s STARNET plugin to credit Payee’s account.
   d. Upon confirmation credit,
      i. Notify Payer’s Provider.
      ii. Notify Payee’s Provider.

6. Receipt

Throughout all the lifecycle of payment, STARNET will keep track of the payment and its status. Payer and Payee can receive notification about the status of the payments from their respective Providers. The following notifications will be sent during the life cycle of the Payment.

1. PaymentInitiationNotice – An alert sent to both Payer and Payee about the initiation of Payment.
2. PaymentApprovedNotice – An alert sent to Payee when the Payer approves the Payment initiated by Payee.
3. PaymentAuthorizedNotice – An alert sent to Payee when the Payer approves the Payment.
4. PaymentUnderProcessingNotice – An alert sent to Payer and Payee when the Payer Provider received the payment request.
5. PaymentReleasedNotice – An alert sent to Payer and Payee when the Payer Provider releases the payment to STARNET.
6. PaymentProcessedNotice – An alert sent to Payer and Payee when the STARNET debits Payer and credits Payee.
7. PaymentDelayNotice – An alert sent to Payer and Payee when there is a delay in the screening and approval of payment.
8. PaymentRejectNotice – An alert sent to Payer and Payee when the Payer or the Payer Provider rejects the payment.
9. PaymentErrorNotice – An alert sent to initiator (Payer or Payee) when the submitted payment has an error.

7. Reconciliation

This solution is based on Payer authorized payment model, and permits the request for payments initiated by Payee. That said, the chances for unauthorized, fraudulent and erroneous payments are rare. There could be a disputed payment only when the Payer’s account to authorize a payment is compromised; otherwise all other payments are considered good and valid. In order to prevent unauthorized payments due to a compromised account, this proposal requires the Payer Institution implement highly secure authentication methods such as, Finger Print, Facial Recognition, Two-Factor authentication, in addition to login/password authentication. In addition to the security features, Payer Institution has checks to review payments above certain limits, screen the payments against sanctioned list, and the STARNET’s fraudulent pattern monitoring to prevent unauthorized payments.

With respect to reconciliation of payments, the following debit/credit of payment is posted.

a. Debit Payer’s Account at Payer’s Provider System, and Credit the amount to Payer’s Provider Account at Payer’s Provider System. This transaction is handled by Payer’s Provider and the reconciliation of these transactions are internal to Payer’s Provider.

b. Debit Payer’s Provider Account at STARNET, and Credit the amount to Payee’s Provider Account at STARNET. This transaction is handled by STARNET, and STARNET will be responsible to reconcile the accounts.

c. Debit Payee’s Provider Account at Payee’s Provider System, and Credit the amount to Payee’s Account at Payee’s Provider System. This transaction is handled by Payee’s Provider and the reconciliation of these transactions are internal to Payee’s Provider.
At the end of all these transactions, the following must be true.

a. Payer Provider Account Balance at Payer Provider System + Payer Provider Account Balance at STARNET = 0 (ZERO)

b. Payee Provider Account Balance at Payee Provider System + Payee Provider Account Balance at STARNET = 0 (ZERO)
Part A, Section 2: Use Case Description

B2B Payments – Initiated by Payee

Payee can initiate B2B payment, provided Payee has STAR ACCOUNT of Payer. Even though Payee is requesting Payment, Payee will never receive the Payment without the approval and authorization of the payment by Payer. Such payments include, but not limited to invoice for the services or products, payroll taxes, unemployment taxes and other government taxes. The following are the steps involved in the B2B payment initiated by Payee.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Action Performed By</th>
<th>Sent To</th>
<th>Message(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Payee Submits the Payment to Payee Provider</td>
<td>Payee</td>
<td>Payee Provider</td>
<td>PaymentRequestResponse</td>
</tr>
<tr>
<td>2</td>
<td>Payee Provider accepts, validates and submits to STARNET and receives a Tracker Code.</td>
<td>Payee Provider</td>
<td>STARNET</td>
<td>PaymentRequestResponse</td>
</tr>
<tr>
<td>3</td>
<td>STARNET Looks up Payer’s Provider. Registers the Payment Request. If Payer’s Provider is not found, Status is updated “Invalid Payer”. Otherwise sends a notice to Payer’s Provider.</td>
<td>STARNET</td>
<td>Payer Provider</td>
<td>PaymentRequestResponsePaymentRequestResponsePaymentUpdateEvent(PayerProviderAck)</td>
</tr>
<tr>
<td>4</td>
<td>Payer’s Provider validates the Request, identifies Payer’s details, and sends the notification to Payer.</td>
<td>Payer Provider</td>
<td>Payer</td>
<td>PaymentUpdateEvent(PayerAck)</td>
</tr>
<tr>
<td>5</td>
<td>Payer reviews the request and accepts the payment request.</td>
<td>Payer (User 1)</td>
<td></td>
<td>PaymentUpdateEvent(PayerAccepted)</td>
</tr>
<tr>
<td>6a</td>
<td>If the requested payment is in foreign currency, Request for foreign currency conversion rate.</td>
<td>Payer (User 1)</td>
<td>Payer Provider</td>
<td>PaymentPriceRequest</td>
</tr>
<tr>
<td>6b</td>
<td>Provide an Exchange Rate</td>
<td>Payer Provider</td>
<td>Payer (User 1)</td>
<td>PaymentPriceResponse</td>
</tr>
<tr>
<td>7</td>
<td>If currency conversion is involved, accept the conversion rate, and/or submit the payment request.</td>
<td>Payer (User 1)</td>
<td>Payer (User 2)</td>
<td>PaymentSubmitRequestPaymentSubmitResponsePaymentUpdateEvent(PayerSubmitted)</td>
</tr>
</tbody>
</table>
8. Review and Authorize the Payment.
   Payer (User 2)  Payer Provider  PaymentAuthorizeRequest
   PaymentAuthorizeResponse
   PaymentUpdateEvent
   (PayerAuthorized)

9. Check the availability of funds, and put a hold on the account.
   Payer Provider

10. Screen Payer & Payee against the sanctioned list. If there is Hit, Compliance Officer reviews and rejects/approves the payment.
    Payer Provider

11. If Screening has passed, call STARNET to process the payment.
    Payer Provider  STARNET  PaymentReleaseRequest
    PaymentReleaseResponse
    PaymentUpdateEvent
    (PayerProviderReleased)

12. Check for fraud patter from Payee, to Payee, from Payer and to Payer.
    STARNET

13. If there is no fraud, debit Payer’s Provider, and credit Payee’s Provider.
    STARNET  Payers Provider & Payee Provider  PaymentPostRequest
    PaymentPostResponse
    PaymentUpdateEvent
    (PaymentPosted)
B2B payments initiated by Payer are similar to B2B payments initiated by Payee, but with fewer steps. In the case of B2B payments initiated by Payee, it is important to establish the validity of the payment request and hence requires the acceptance of Payment Request by Payer. But in the case B2B payments initiated by Payer, this acceptance is not required.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Action Performed By</th>
<th>Sent To</th>
<th>Message(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>Payer enters the Payment request.</td>
<td>Payer (User 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1b</td>
<td>If the requested payment is in foreign currency, Request for foreign</td>
<td>Payer (User 1)</td>
<td>Payer Provider</td>
<td>PaymentPriceRequest</td>
</tr>
<tr>
<td></td>
<td>currency conversion rate.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1c</td>
<td>Provide an Exchange Rate</td>
<td>Payer Provider</td>
<td>Payer (User 1)</td>
<td>PaymentPriceResponse</td>
</tr>
<tr>
<td>2</td>
<td>If currency conversion is involved, accept the conversion rate, and/or</td>
<td>Payer (User 1)</td>
<td>Payer (User 2)</td>
<td>PaymentSubmitRequest PaymentSubmitResponse PaymentUpdateEvent (PayerSubmitted)</td>
</tr>
<tr>
<td></td>
<td>submit the payment request.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Review and Authorize the Payment.</td>
<td>Payer (User 2)</td>
<td>Payer Provider</td>
<td>PaymentAuthorizeRequest PaymentAuthorizeResponse PaymentUpdateEvent (PayerAuthorized)</td>
</tr>
<tr>
<td>4</td>
<td>Check the availability of funds, and put a hold on the account.</td>
<td>Payer Provider</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Screen Payer &amp; Payee against the sanctioned list. If there is Hit,</td>
<td>Payer Provider</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compliance Officer reviews and rejects/approves the payment.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>If Screening has passed, call STARNET to process the payment.</td>
<td>Payer Provider</td>
<td>STARNET</td>
<td>PaymentReleaseRequest PaymentReleaseResponse PaymentUpdateEvent (PayerProviderReleased)</td>
</tr>
<tr>
<td>7</td>
<td>Check for fraud patter from Payee, to Payee, from Payer and to Payer.</td>
<td>STARNET</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
If there is no fraud, debit Payer’s Provider, and credit Payer’s Provider.

STARNET: Payers Provider & Payee Provider
PaymentPostRequest
PaymentPostResponse
PaymentUpdateEvent (PaymentPosted)

---

**B2P Payments – Initiated by Payer**

B2P payments initiated by Payer follows the exact same workflow of B2B payments initiated by Payer. In both the cases business is the Payer and requires dual verification (maker-checker function) before releasing the payment to Payer’s Provider.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Action Performed By</th>
<th>Sent To</th>
<th>Message(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>Payer enters the Payment request.</td>
<td>Payer (User 1)</td>
<td>Payer</td>
<td>PaymentPriceRequest</td>
</tr>
<tr>
<td>1b</td>
<td>If the requested payment is in foreign currency, Request for foreign currency conversion rate.</td>
<td>Payer (User 1)</td>
<td>Payer Provider</td>
<td>PaymentPriceRequest</td>
</tr>
<tr>
<td>1c</td>
<td>Provide an Exchange Rate</td>
<td>Payer Provider</td>
<td>Payer (User 1)</td>
<td>PaymentPriceResponse</td>
</tr>
<tr>
<td>2</td>
<td>If currency conversion is</td>
<td>Payer</td>
<td>Payer</td>
<td>PaymentSubmitRequest</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>involved, accept the conversion rate, and/or submit the payment request.</strong></td>
<td>(User 1)</td>
<td>(User 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3</strong> Review and Authorize the Payment.</td>
<td>Payer (User 2)</td>
<td>Payer Provider</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4</strong> Check the availability of funds, and put a hold on the account.</td>
<td>Payer Provider</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>5</strong> Screen Payer &amp; Payee against the sanctioned list. If there is Hit, Compliance Officer reviews and rejects/approves the payment.</td>
<td>Payer Provider</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>6</strong> If Screening has passed, call STARNET to process the payment.</td>
<td>Payer Provider</td>
<td>STARNET</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>7</strong> Check for fraud patter from Payee, to Payee, from Payer and to Payer.</td>
<td>STARNET</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>8</strong> If there is no fraud, debit Payer’s Provider, and credit Payer’s Provider.</td>
<td>STARNET</td>
<td>Payers Provider &amp; Payee Provider</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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P2B Payments – Initiated by Payee

P2B payments initiated by Payee (Business) are processed in the same was as of B2B payments initiated by Payee, except that there is no dual authorization control required in P2B payments.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Action Performed By</th>
<th>Sent To</th>
<th>Message(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Payee submits the Payment to Payee Provider.</td>
<td>Payee</td>
<td>Payee Provider</td>
<td>PaymentRequest PaymentRequestResponse</td>
</tr>
<tr>
<td>2</td>
<td>Payee Provider accepts, validates and submits to STARNET and receives a Tracker Code.</td>
<td>Payee Provider</td>
<td>STARNET</td>
<td>PaymentRequest PaymentRequestResponse</td>
</tr>
<tr>
<td>3</td>
<td>STARNET Looks up Payer’s Provider. Registers the Payment Request. If Payer’s Provider is not found, Status is updated “Invalid Payer”. Otherwise sends a notice to Payer’s Provider.</td>
<td>STARNET</td>
<td>Payer Provider</td>
<td>PaymentRequest PaymentRequestResponse PaymentUpdateEvent (PayerProviderAck)</td>
</tr>
<tr>
<td>4</td>
<td>Payer’s Provider validates the Request, identifies Payer’s details, and sends the notification to Payer.</td>
<td>Payer Provider</td>
<td>Payer</td>
<td>PaymentUpdateEvent (PayerAck)</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Payer</td>
<td>Provider</td>
<td>Event</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------------------------</td>
<td>---------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>5</td>
<td>Payer reviews the request and accepts the payment request.</td>
<td>Payer</td>
<td>PaymentUpdateEvent</td>
<td>(PayerAccepted)</td>
</tr>
<tr>
<td>6a</td>
<td>If the requested payment is in foreign currency, Request for foreign currency conversion rate.</td>
<td>Payer</td>
<td>Payer Provider</td>
<td>PaymentPriceRequest</td>
</tr>
<tr>
<td>6b</td>
<td>Provide an Exchange Rate</td>
<td>Payer Provider</td>
<td>Payer</td>
<td>PaymentPriceResponse</td>
</tr>
<tr>
<td>7</td>
<td>If currency conversion is involved, accept the conversion rate, and/or authorize the payment request.</td>
<td>Payer</td>
<td>Payer Provider</td>
<td>PaymentSubmitRequest PaymentSubmitResponse PaymentUpdateEvent (PayerAuthorized)</td>
</tr>
<tr>
<td>8</td>
<td>Check the availability of funds, and put a hold on the account.</td>
<td>Payer Provider</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Screen Payer &amp; Payee against the sanctioned list. If there is Hit, Compliance Officer reviews and rejects/approves the payment.</td>
<td>Payer Provider</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>If Screening has passed, call STARNET to process the payment.</td>
<td>Payer Provider</td>
<td>STARNET</td>
<td>PaymentReleaseRequest PaymentReleaseResponse PaymentUpdateEvent (PayerProviderReleased)</td>
</tr>
<tr>
<td>11</td>
<td>Check for fraud patter from Payee, to Payee, from Payer and to Payer.</td>
<td>STARNET</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>If there is no fraud, debit Payer’s Provider, and credit Payer’s Provider.</td>
<td>STARNET</td>
<td>Payers Provider &amp; Payee Provider</td>
<td>PaymentPostRequest PaymentPostResponse PaymentUpdateEvent (PaymentPosted)</td>
</tr>
</tbody>
</table>
### P2B Payments – Initiated by Payer

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Action Performed By</th>
<th>Sent To</th>
<th>Message(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>Payer enter the Payment Request.</td>
<td>Payer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1b</td>
<td>If the requested payment is in foreign currency, Request for foreign currency conversion rate.</td>
<td>Payer</td>
<td>Payer Provider</td>
<td>PaymentPriceRequest</td>
</tr>
<tr>
<td>1c</td>
<td>Provide an Exchange Rate</td>
<td>Payer Provider</td>
<td>Payer</td>
<td>PaymentPriceResponse</td>
</tr>
<tr>
<td>2</td>
<td>If currency conversion is involved, accept the conversion rate, and/or authorize the payment request.</td>
<td>Payer</td>
<td>Payer Provider</td>
<td>PaymentAuthorizeRequest PaymentAuthorizeResponse PaymentUpdateEvent (PayerAuthorized)</td>
</tr>
<tr>
<td>3</td>
<td>Check the availability of funds, and put a hold on the account.</td>
<td>Payer Provider</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Screen Payer &amp; Payee against the sanctioned list. If there is Hit, Compliance Officer reviews and rejects/approves the payment.</td>
<td>Payer Provider</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. If Screening has passed, call STARNET to process the payment. 

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Action Performed By</th>
<th>Sent To</th>
<th>Message(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>If Screening has passed, call STARNET to process the payment.</td>
<td>Payer Provider</td>
<td>STARNET</td>
<td>PaymentReleaseRequest, PaymentReleaseResponse, PaymentUpdateEvent (PayerProviderReleased)</td>
</tr>
</tbody>
</table>

6. Check for fraud pattern from Payee, to Payee, from Payer and to Payer.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Action Performed By</th>
<th>Sent To</th>
<th>Message(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Check for fraud pattern from Payee, to Payee, from Payer and to Payer.</td>
<td>STARNET</td>
<td>STARNET</td>
<td>PaymentPostRequest, PaymentPostResponse, PaymentUpdateEvent (PaymentPosted)</td>
</tr>
</tbody>
</table>

7. If there is no fraud, debit Payer’s Provider, and credit Payee’s Provider.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Action Performed By</th>
<th>Sent To</th>
<th>Message(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>If there is no fraud, debit Payer’s Provider, and credit Payee’s Provider.</td>
<td>STARNET Payers Provider &amp; Payee Provider</td>
<td>STARNET Payers Provider &amp; Payee Provider</td>
<td>PaymentPostRequest, PaymentPostResponse, PaymentUpdateEvent (PaymentPosted)</td>
</tr>
</tbody>
</table>

P2P Payments – Initiated by Payee

P2P payments initiated by Payee follows the same workflow as of P2B payments initiated by Payee. In both the cases Person making the payment needs to review the request from Payee and needs to authorize.

<table>
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<tr>
<th>Step</th>
<th>Action</th>
<th>Action Performed By</th>
<th>Sent To</th>
<th>Message(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Payee submits the Payment to Payee Provider.</td>
<td>Payee</td>
<td>Payee Provider</td>
<td>PaymentRequest, PaymentRequestResponse</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Actor 1</td>
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<td>---------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>2</td>
<td>Payee Provider accepts, validates and submits to STARNET and receives a Tracker Code.</td>
<td>Payee Provider</td>
<td>STARNET</td>
<td>PaymentRequest</td>
</tr>
<tr>
<td>3</td>
<td>STARNET Looks up Payer’s Provider. Registers the Payment Request. If Payer’s Provider is not found, Status is updated “Invalid Payer”. Otherwise sends a notice to Payer’s Provider.</td>
<td>STARNET</td>
<td>Payer Provider</td>
<td>PaymentRequest</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PaymentRequestResponse</td>
</tr>
<tr>
<td>4</td>
<td>Payer’s Provider validates the Request, identifies Payer’s details, and sends the notification to Payer.</td>
<td>Payer Provider</td>
<td>Payer</td>
<td>PaymentUpdateEvent</td>
</tr>
<tr>
<td>5</td>
<td>Payer reviews the request and accepts the payment request.</td>
<td>Payer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6a</td>
<td>If the requested payment is in foreign currency, Request for foreign currency conversion rate.</td>
<td>Payer</td>
<td>Payer Provider</td>
<td>PaymentPriceRequest</td>
</tr>
<tr>
<td>6b</td>
<td>Provide an Exchange Rate</td>
<td>Payer Provider</td>
<td>Payer</td>
<td>PaymentPriceResponse</td>
</tr>
<tr>
<td>7</td>
<td>If currency conversion is involved, accept the conversion rate, and/or authorize the payment request.</td>
<td>Payer</td>
<td>Payer Provider</td>
<td>PaymentSubmitRequest</td>
</tr>
<tr>
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<td>PaymentSubmitSubmitResponse</td>
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<tr>
<td>8</td>
<td>Check the availability of funds, and put a hold on the account.</td>
<td>Payer Provider</td>
<td></td>
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<tr>
<td>9</td>
<td>Screen Payer &amp; Payee against the sanctioned list. If there is Hit, Compliance Officer reviews and rejects/approves the payment.</td>
<td>Payer Provider</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>If Screening has passed, call STARNET to process the payment.</td>
<td>Payer Provider</td>
<td>STARNET</td>
<td>PaymentReleaseRequest</td>
</tr>
<tr>
<td>11</td>
<td>Check for fraud patter from Payee, to Payee, from Payer and to Payer.</td>
<td>STARNET</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
If there is no fraud, debit Payer’s Provider, and credit Payer’s Provider.

### STARNET

- **Payers Provider & Payee Provider**
- **PaymentPostRequest**
- **PaymentPostResponse**
- **PaymentUpdateEvent**
  - **(PaymentPosted)**

---

#### P2P Payments – Initiated by Payer

P2P payments initiated by Payer follow the same exact workflow of P2B payments initiated by Payer. In both the cases the payment is initiated by Payer (Person) and the workflow doesn’t change at the receiving end of the payment.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Action Performed By</th>
<th>Sent To</th>
<th>Message(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>Payer enter the Payment Request.</td>
<td>Payer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1b</td>
<td>If the requested payment is in foreign currency, Request for foreign currency conversion rate.</td>
<td>Payer</td>
<td>Payer Provider</td>
<td>PaymentPriceRequest</td>
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<tr>
<td>1c</td>
<td>Provide an Exchange Rate</td>
<td>Payer Provider</td>
<td>Payer</td>
<td>PaymentPriceResponse</td>
</tr>
<tr>
<td>2</td>
<td>If currency conversion is involved, accept the conversion</td>
<td>Payer</td>
<td>Payer Provider</td>
<td>PaymentAuthorizeRequest, PaymentAuthorizeResponse</td>
</tr>
<tr>
<td>Step</td>
<td>Description</td>
<td>Involved Parties</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>-----------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Check the availability of funds, and put a hold on the account.</td>
<td>Payer Provider</td>
<td>PaymentUpdateEvent (PayerAuthorized)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Screen Payer &amp; Payee against the sanctioned list. If there is Hit, Compliance Officer reviews and rejects/approves the payment.</td>
<td>Payer Provider</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>If Screening has passed, call STARNET to process the payment.</td>
<td>Payer Provider, STARNET</td>
<td>PaymentReleaseRequest, PaymentReleaseResponse, PaymentUpdateEvent (PayerProviderReleased)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Check for fraud pattern from Payee, to Payee, from Payer and to Payer.</td>
<td>STARNET</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>If there is no fraud, debit Payer’s Provider, and credit Payee’s Provider.</td>
<td>STARNET, Payers Provider &amp; Payee Provider</td>
<td>PaymentPostRequest, PaymentPostResponse, PaymentUpdateEvent (PaymentPosted)</td>
<td></td>
</tr>
</tbody>
</table>

**Common Features**

**Authentication and Data Security**

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Whether the payment is initiated by Payee or Payer, its Provider is fully responsible to authenticate the user. Each Provider will have a secure VPN connection with STARNET, and only the registered system(s) will be able to communicate with STARNET. Any data transmitted or received by STARNET will be encrypted using highest encryption standards, such 256 bit encryption.

**Privacy of Data**
The Providers will be maintaining all the personal information of its clients, and STARNET doesn’t require any private information from the Provider. The Payer’s and Payee’s STAR ACCOUNT numbers are the only information used by STARNET to lookup the Providers. For instance, when the Payee requests payment from a STAR ACCOUNT, STARNET will look up the Payer’s Provider and routes the Payment Request to the Provider.

**Change of Accounts**
A business or a person can change the account at any time, and will have no impact as long as the Global Instruction Repository is updated. There will not be a need to call the vendors and other billing agents to update the account, as the same STAR ACCOUNT can be still used to lookup the Instruction.

**Payment Finality**
Though the payment has different stages of initiation, review, approvals, and etc. the payment is not final until STARNET does the final step, which is debiting Payer’s Provider and crediting Payee’s Provider. The payment can be corrected or cancelled any time before this stage, but becomes final after this stage.

**Liability**
It is important to make sure the responsible party at the various stage of the transaction is held liable for any error or frauds.

a. If the Payee has initiated incorrect, fraudulent, unauthenticated, unauthorized payment, then STARNET will hold Payee’s Provider responsible for the error, as Payee’s Provider is responsible to authenticate, authorize and know its customer well. As STARNET faces Payee’s Provider, STARNET will hold Payee’s Provider responsible for both Payee’s Provider fault and Payee’s fault.

b. If the Payment is initiated from Payer’s provider on behalf of the Payer, and it is found to be fraudulent, unauthenticated or unauthorized payment, then STARNET will hold Payer’s Provider responsible for the error, as Payer’s Provider is
responsible to authenticate, authorize and know its customer well. However, Payer’s Provider cannot be held responsible for the error of Payer, in which case Payer’s Provider will hold Payer responsible. But as STARNET faces Payer’s Provider, STARNET will hold Payer’s Provider responsible for both Payer’s Provider fault and Payer’s fault.

c. Payee’s and Payer’s Provider can choose to set the limit, internal release controls, hold periods, and other security controls as appropriate for its customer base and internal control procedures.

Hold Period and Fast Approval
Payer’s Provider final release is the last stop before the payment reaches its finality in STARNET. Each Provider can setup the hold period, but it can’t be more than 30 minutes. Fast approval is very important but the security and authenticity of the payment is more critical.

Part A, Section 3: Use Case by Effectiveness Criteria

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</table>
PART B: BUSINESS CONSIDERATIONS

1. Implementation Timeline

   Required Development
   The solution requires the following new systems or components to be developed.

   STARNET – The core payment network with multi-currency account and payment capability.

   GIN Registry – Global Instruction (Standing Settlement Instruction) Lookup Registry that is used to lookup Provider of a STAR ACCOUNT based on Products and Currencies.

   STARNET Plugin – Each Provider must implement the Plugin based on the defined standards in order to communicate with STARNET.

   Cross Border Payment Integration – In order to support cross-border payments, STARNET must be connected with a bank (& hence its payment network) in each country. Connecting with a global network of banks is a tedious task and the author recommends phased approach.

   Phase 1: USA Only
   Phase 2: Canada, Europe, Mexico
   Phase 3: G10 Countries
   Phase 4: Asian Countries
   Phase 5: Latam Countries
   Phase 6: African Countries

   Approach
   SwapsTech is primarily participating and proposing this solution as a way to give back to the country and the industry, and not for commercial reasons. SwapsTech will request the existing Faster Payment Task Forces to participate in the buildup of this system, so all stakeholders are represented fairly. SwapsTech will not have any commercial interest, but will require the provision for continuous innovation and special voting power to serve industry’s best interest.

   Timeline

<table>
<thead>
<tr>
<th>Phase</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>STARNET Analysis, Message Specification &amp; Design</td>
<td>6 months</td>
</tr>
<tr>
<td>Project</td>
<td>Development &amp; QA</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Analysis, API Specification &amp; Design</td>
<td>6 months</td>
</tr>
<tr>
<td>Development &amp; QA</td>
<td>6 months</td>
</tr>
<tr>
<td>Integration Testing</td>
<td>3 months</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project</th>
<th>Development &amp; QA</th>
<th>Integration Testing</th>
<th>STARNET Plugin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis &amp; Design</td>
<td>3 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development &amp; QA</td>
<td>6 months</td>
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<td></td>
</tr>
<tr>
<td>Integration Testing</td>
<td>3 months</td>
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<td></td>
</tr>
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</table>

<table>
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<th>Development &amp; QA</th>
<th>Integration Testing</th>
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<tbody>
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<td>Analysis &amp; Design</td>
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<td></td>
<td>3 months</td>
</tr>
<tr>
<td>Development &amp; QA</td>
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<tr>
<td>Integration Testing</td>
<td>3 months</td>
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</table>

<table>
<thead>
<tr>
<th>Project</th>
<th>Development &amp; QA</th>
<th>Integration Testing</th>
<th>Cross Border Payment Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis, Message Specification &amp; Design</td>
<td>6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development &amp; QA (per Country and can run Parallel)</td>
<td>12 months</td>
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<td></td>
</tr>
<tr>
<td>Integration Testing (per Country and can run Parallel)</td>
<td>3 months</td>
<td></td>
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</tr>
</tbody>
</table>

2. Value Proposition and Competition

This solution offers the best way to provide a secure and faster payment solution without altering the way current bank accounts and the banking systems are setup. Banks can continue to offer bank accounts in the same way using the same system, and the bank account details can now become confidential between the Account Owner and the Provider. So this solution doesn’t require the complete overhaul of the banking system.

Banks and non-banks are required to develop the plugin to connect with STARNET, and the development of the plugin across multiple banks will create more jobs and is good for the economy. The older systems and methods may continue to exist, but may get retired as the demand for those products die down. So this proposal allows for a smooth transition from the current, slow and insecure payment system, to faster and secure payment system without displaying current job participants.

STAR ACCOUNT is owned by the individual or the business, and not by any Provider. So the owner can change the Provider without an issue, and without impacting the records of Payees/Vendors. Financial Institutions can charge a fee to register STAR ACCOUNT.

STARNET allows both banks and non-banks to participate in the payment processing. So the banks who are usually slow to innovate have to compete with the offerings from non-banks.
and also be forced to charge lower fees to be competitive. Banks and non-banks can add value added service such as API Banking, Bulk Processing, Treasury Services, Cash Management, etc. to businesses.

Customers will get the best value as their mobile app or online portal will be providing real time updates of payments, and they clearly see the current stage/status of the payment.

As the payables and receivables are pre-registered in a centralized system, even before the actual payment transaction completes, financial institutions can use this data to understand the financial strength of the institution, use certain receivables as collateral and fund certain transactions.

As the payments are tracked in a central system, credit worthiness of certain client can also be determined by looking at the historical transactions.

As all the transactions are recording in a centralized system, fraudulent patterns can be detected, and also serves a central repository for government agencies to investigate frauds.

Any technology vendor can develop STARNET plugin, and offer as a product to Financial Institutions. The open specification of STARNET API increases the competition among vendors and offers reduced TCO to financial institutions. STARNET plugin can also be developed by financial institutions using their own resources if it desires to do so, enabling them not to be tied with any vendor solution.

Fees for the transaction can either be paid by Payee or Payer, based on the preferences set by Payer. STARNET will share a portion of the fee to Payer and Payee providers.

Payer’s Provider can offer credit facility and charge additional fees for the credit. No matter how the Payer makes the payment, either using cash or credit, Payee will only pay a transaction fee (if so selected by Payer), and will not be responsible for any credit charges incurred by Payer. Because Payer is not having cash to make the payment, he/she is asking for credit facility, and so only Payer must be responsible for the credit charges, and not the Payee.

3. Integration Effort

Technology

Scalability and integrity of data is so critical for a Payment system. SwapsTech has built systems using hyper-scalable technologies and will use similar technologies for STARNET. STARNET will employ highly available, load balanced, hyper scalable messaging backbone for the transactions with financial institutions. All the data will be stored in hyper scalable
BIG DATA system, without putting any limit on the growth of data. STARNET will include a Notification System that notifies Payee and Payer providers about the status of the payment, which can then be routed to Payer and Payee’s preferred access points, such as Mobile App, Online Portal, Emails, Text Messages, etc.

**Billing Agents**

Billing agents need to route their requests via their Provider using Payment API or File Upload. As the financial institutions are regulated and it is important to follow KYC, the burden of screening the businesses and agents will lie in the hands of financial institutions. Financial Institutions will expose an API for bulk payments, or allow file based upload of bills.

**Integration Efforts**

STARNET system has a simple but yet highly powerful architecture. It has a grid of Payment Processing Engines which can be increased to support the growth of volume. All the requests to the Payment Engine are routed via RMQP based messaging Queues.

Payment data will be stored in a BIG database to support the growth in volume. A notification routing engine will be setup to route the notifications to appropriate Provider’s Queue.

![Diagram of integration between Provider and STARNET](image)

Each Provider will have two queues established, one to submit payment requests, and another one to receive responses and notifications.

**Integration between Provider and STARNET**
Each participating entity (Provider) will be required to establish VPN connection with STARNET, and STARNET will setup a Queue for the provider to post requests and another Queue to receive responses and notifications.

Provider needs to implement STARNET Plugin to post payment messages, and to process payment update notifications. For larger institution with heavy processes, it is expected to take 12 months to implement and test.

<table>
<thead>
<tr>
<th>STARNET Plugin</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis &amp; Design</td>
<td>3 months</td>
</tr>
<tr>
<td>Development &amp; QA</td>
<td>6 months</td>
</tr>
<tr>
<td>Integration Testing</td>
<td>3 months</td>
</tr>
</tbody>
</table>

**Integration between Provider and its Customer**

The customers can now keep their bank account details with the Provider confidential, without having to disclose it to any other party. Customer can choose its STAR ACCOUNT identifier, and the Provider can help register it with GIN registry. Providers will be required to upgrade their online portal, mobile app, to enable initiating faster payment, receive real-time notifications, authorize payments and track the payment end-end.

<table>
<thead>
<tr>
<th>SAM System</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis &amp; Design</td>
<td>3 months</td>
</tr>
<tr>
<td>Development &amp; QA</td>
<td>12 months</td>
</tr>
<tr>
<td>Integration Testing</td>
<td>3 months</td>
</tr>
</tbody>
</table>

**Integration between with Global Payment Network(s)**

In order to support cross-border payments, STARNET must be connected with a bank (& hence its payment network) in each country. Connecting with a global network of banks is a tedious task and the author recommends phased approach.

- **Phase 1**: USA Only
- **Phase 2**: Canada, Europe, Mexico
- **Phase 3**: G10 Countries
- **Phase 4**: Asian Countries
- **Phase 5**: Latam Countries
- **Phase 6**: African Countries

After the completion of first phase for domestic and cross-border USD payments (Note: both Payer and Payee are required to have STAR Account), Integration with Global Payment Networks could be started.
For global payment network, the following is required.

STARNET will partner with a local bank in that country to deliver payments in that country. If that country supports faster payment, then the partner bank will use the local payment network and deliver the payment in real time. This partner bank needs to be part of the STARNET and follow the messaging requirements, so the Payer in USA can receive payment update notifications. This partner bank is required to implement the same STARNET Plugin in order to process the payments, and send updates.

Each such integration will have the same effort as of a domestic bank, plus 1 to 2 years of effort to integrate with their regional payment system to process cross border payments.
PART C: SELF-ASSESSMENT AGAINST EFFECTIVENESS CRITERIA

1. Ubiquity

_Self-assessed rating:_

<table>
<thead>
<tr>
<th>Effectiveness Criteria</th>
<th>Effectiveness Criteria Self-Assessment (Check One)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria Name</td>
<td>#</td>
<td>Consideration Name</td>
</tr>
<tr>
<td>Ubiquity</td>
<td>U.1</td>
<td>Accessibility</td>
</tr>
<tr>
<td>Ubiquity</td>
<td>U.2</td>
<td>Usability</td>
</tr>
<tr>
<td>Ubiquity</td>
<td>U.3</td>
<td>Predictability</td>
</tr>
<tr>
<td>Ubiquity</td>
<td>U.4</td>
<td>Contextual data capability</td>
</tr>
<tr>
<td>Ubiquity</td>
<td>U.5</td>
<td>Cross-border functionality</td>
</tr>
<tr>
<td>Ubiquity</td>
<td>U.6</td>
<td>Applicability to multiple use cases</td>
</tr>
</tbody>
</table>

_Justification for U.1:_

_U.1.1 A virtual STAR ACCOUNT is used in front of real existing account at a financial institution, as a firewall account which is safe and secure._

_U.1.2 Payment can be initiated and received by any entity that has a registered STAR ACCOUNT._

_U.1.3 Multi-currency Accounts and Payments are fully supported._

_U.1.4 Anyone who has an account at a regulated financial institution can register for STAR ACCOUNT, and can pay/receive payment._

_U.1.5 The solution employs plug-play architecture and any and all financial institution can quickly adopt the solution._

_U.1.6 The solution connects with global payment networks, and requires the foreign bank follow the same standards._
Justification for U.2:

U2.1 The solution supports online portal, mobile app, call center and in-person service channels.

U2.2 The solution supports any entity to pay or receive payment using STAR ACCOUNT which is a virtual ID which could be Phone, Email or any other identifier preferred by the customer.

U2.3 The solution can be accessed 24x7x365. Payment status is promptly relayed to both Payer and Receiver.

U2.4 The solution requires very minimal information which can be easily supported via online portal, mobile app, or other channel. However, those end-user applications will be provided by their respective financial institutions.

Justification for U.3:

U.3.1 The solution requires payer’s institution, payee’s institution, payer, payee and STARNET participating (or receiving notification) in each and every transaction.

U.3.2 End-user experience is provided by each Provider, and they will be responsible to provide the legal disclosure. However, the fees and timing could be provided. The timing might vary for different scenarios, as certain use cases require dual authorization, and all payments need to go thru screening process.

U.3.3 The solution uses XML based message and standard secure protocols.

U.3.4. The solution supports the same set of features across all channels. However, these channels must be provided by Payer or Payee’s financial institution.

U.3.5. Please refer the liabilities section.

U.3.6. STAR ACCOUNT, STARNET, GIN, SAM are the systems used in the solution. From customer perspective, only STAR ACCOUNT is used for payments.

Justification for U.4:

U.4.1 All payment message include the payment purpose, information required by another country (such as Personal ID), details of bill, invoice document and etc.
U.4.2 The data is sent or received as XML message and can be easily integrated with any system producing or consuming it.

U.4.3 Any type of number of billing or payment attribute can be added in the message without any limitation.

**Justification for U.5:**

U.5.1 Cross-border payments are fully supported using the same standards and message formats. All the cost is already pre-defined and acceptable by

U.5.2 STARNET can connect with any payment network in another country, and STARNET’s partner bank will translate the messages. All STARNET features will be supported to the extend, local payment networks could support them.

U.5.3 Exchange rates and fees will be disclosed upfront and needs to be accepted. The exchange rate and fees charged will be provided and disclosed by Payer’s financial institution.

U.5.4 Foreign Exchange Conversion is fully supported.

U.5.5 Cross-border payment is an integral part of the solution.

**Justification for U.6:**

The solution is applicable for B2B, B2P, P2B and P2P use cases.

2. Efficiency

**Self-assessed rating:**

<table>
<thead>
<tr>
<th>Effectiveness Criteria</th>
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<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
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<td><strong>#</strong> Consideration Name</td>
<td><strong>VE</strong></td>
</tr>
<tr>
<td>Efficiency</td>
<td>E.1 Enables competition</td>
<td>VE</td>
</tr>
<tr>
<td>Efficiency</td>
<td>E.2 Capability to enable value-added services</td>
<td>VE</td>
</tr>
<tr>
<td>Efficiency</td>
<td>E.3 Implementation</td>
<td>VE</td>
</tr>
</tbody>
</table>
### Justification for E.1:

**E.1.1** The customer can choose any provider that provides better price and services.

**E.1.2** The customer can easily switch to any provider without changing STAR ACCOUNT, and without impacting the existing payment setups. All they have to do is to update the GIN registry.

**E.1.3** Provider, who are regulated entities have to disclose all the fees, services provided, responsibilities and liabilities upfront.

**E.1.4** Any Provider can participate in initiating and receiving payments on behalf of their clients.

### Justification for E.2:

**E.2.1** The solution will be implemented using open XML messaging standards. Any additional services can be built on the open standards.

**E.2.2** Any entity can adopt this standard and become a provider in STARNET.

**E.2.3** Provider, who are regulated entities have to disclose all the value added services and the fees associated with that.

### Justification for E.3:

The implementation plan is discussed above. If approved, SWAPSTECH will seek funding from Major Participating Financial Institutions or seek the funding from Government Agencies, as a Loan, and the loan will be paid back from the fee income.
Justification for E.4:

E.4.1 The solution uses XML messages and protocols can easily interface and interoperate with any system.

E.4.2 The message format supports cross-border payments, and include fields to support the requirements in other countries.

E.4.3 XML messages are easy to develop and integrate.

E.4.4 XML messages can be easily extended for future needs.

E.4.5 This solution doesn’t adopt an existing standard, but proposes defining a new standard, as the author believes that message should meet the requirements, instead of changing the requirements to fit within the message specification and limitations.

Justification for E.5:

E.5.1 The solution supports initiation, review of payment request, acceptance of payment request, authorization, exchange rate request, exchange rate acceptance, fee acceptance, good funds availability, settlement, clearing and reconciliation.

E.5.2 The solution is secure, reliable, scalable, follows all compliance requirements, helps detect fraud patterns, and notifies the participants about the status of the payment.

Justification for E.6:

E.6.1 The solution supports all the use cases of B2B, B2P, P2B and P2P payments, and can easily be extended for other needs and use cases.

E.6.2 The solution is hyper-scalable and grow with the volume by simply adding more servers.

E.6.3 The solution uses open architecture and standards. So it can be easily extended for future needs.

Justification for E.7:

E.7.1 The solution sends the notifications to Payer and Payee about the status of the notification. No payment leaves Payer’s account without his/her approval. The solution also incorporates dual authorization for B2B or B2P payments. System also requires information required for cross-border payments upfront to avoid payment delays at other countries. So the solution prevents the error upfront, and doesn’t let go all the way. This solution also
includes check against prohibited names, and the screening is done before the payment is released.

E.7.2 The solution uses BIG DATA technologies and the data can be stored for 7 years or more for investigative purposes.

E.7.3 The solution also included fraud detection pattern as it has the transactions from several providers from Payee, to Payee, from Payer and to Payee. This enables the system to detect for fraudulent patterns and prevent the frauds.

3. **Safety and Security**

   **Self-assessed rating:**

<table>
<thead>
<tr>
<th>Effectiveness Criteria</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Criteria Name</td>
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<td>Consideration Name</td>
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<td>Safety and Security</td>
<td>S.1</td>
<td>Risk management</td>
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<td>Safety and Security</td>
<td>S.2</td>
<td>Payer authorization</td>
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<td>S.3</td>
<td>Payment finality</td>
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<td>Safety and Security</td>
<td>S.4</td>
<td>Settlement approach</td>
</tr>
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<td>S.5</td>
<td>Handling disputed payments</td>
</tr>
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<td>S.6</td>
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<td>Safety and Security</td>
<td>S.7</td>
<td>Security controls</td>
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<td>Safety and Security</td>
<td>S.8</td>
<td>Resiliency</td>
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<tr>
<td>Safety and Security</td>
<td>S.9</td>
<td>End-user data protection</td>
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Effectiveness Criteria

Effectiveness Criteria Self-Assessment

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<tr>
<th>Criteria Name</th>
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<tbody>
<tr>
<td>Safety and Security</td>
<td>S.10 End-user/provider authentication</td>
<td>5-37</td>
</tr>
<tr>
<td>Safety and Security</td>
<td>S.11 Participation requirements</td>
<td>5-37</td>
</tr>
</tbody>
</table>

**Justification for S.1:**

S.1.1 Any new regulation can be easily adopted and implemented, as the system is implemented using OPEN standards and message formats.

S.1.2 The solution doesn’t take any settlement risk. All the settlement risks are transferred to providers. It is up to the provider to take settlement risk or provide credit lines.

S.1.3 The solution requires most of the operational responsibilities handled by Payer financial institution, and only facilitates the final payment and notifications. The existing operational procedures at the financial institutes will continue to apply.

S.1.4 All payments need to be authorized by the Payer when initiated by Payee. Nobody except the account owner and the providing institute will know the account number. Most of the frauds happen because of the account numbers and private data is exposed. This system operates purely between virtual accounts which acts as the firewall of the real accounts.

S.1.5 All providers will be responsible to contain the risk of the activities handled by their operators and clients. Any frauds or stopped payments due to screening is promptly conveyed to STARNET which then uses to share it with other Providers.

S.1.6 The solution is open for review by regulated authorities. All the providers will be audited so they are compliant as per participating agreement.

**Justification for S.2:**

S.2.1 All payment initiated by Payee must be authorized by Payer. When Payment is initiated by Payer, it is considered authorized by Payer. In case B2B and B2P payments, two authorizations are required.

S.2.2 All payments required Authorization. However, if the customer really needs to auto authorize payments up to certain amount, or to certain Payees, or any other rule, then the Payer takes responsibility and will be liable for all payments auto-authorized. Payer will...
receive notifications about all auto-authorized payments, and will have 30 minutes to cancel any such auto-authorized payment.

S.2.3 Payer will receive notifications about all auto-authorized payments, and will have 30 minutes to cancel any such auto-authorized payment.

**Justification for S.3:**
S.3.1 All payments authorized by the Payer further needs review, screening and approval by Payer’s Provider. The system will either provide a hold on the account, take the funds from a credit facility, or allow the system to do over-draft if the account permits.

S.3.2 The payment becomes final once the Payer’s institution releases the payment. At this time, STARNET immediately debits Payer’s institution and credits Payee’s institution.

S.3.3 Unauthorized payments can’t enter the network. However, if that happens, Payer’s financial institution’s should have procedures to review and approve payments over certain limit per transaction, or per day, or over a period time, and will require to refund Payer for unauthorized payments. Such fraudulent payments must be promptly reported to STARNET to prevent further authorized payments from any other financial institution. Payee’s financial institution will be responsible for reimbursing any unauthorized payments back to Payer’s financial institution, as Payee’s Provider is responsible for KYC of its customer.

**Justification for S.4:**
S.4.1 Settlement from Payer is done between Payer’s Institution and Payer. Likewise, Settlement to Payee is done between Payee’s Institution and Payee. The settlement between Payer’s Institution and Payee’s Institution is done by STARNET per transaction. STARNET will not net/gross settle to avoid reconciliation issues.

S.4.2 Payer’s provider can arrange credit facility for the Payer, and is fully responsible for Payer’s settlement risk. Payer’s provider can have credit facility with other Providers and can request funds from those facilities. However, Payer’s provider is required to have good funds available in the account held at STARNET in order to finalize the transaction.

S.4.3 The solution settles and clears only using Central Bank Money/Currency. Securities can be used as a collateral to fund the account held at STARNET, but the responsibility of managing the collateralized security and liquidity is totally up to the credit line providing Institution.

**Justification for S.5:**
S.5.1 Unauthorized payments can’t enter the network. However, if that happens, Payer’s financial institution’s should have procedures to review and approve payments over certain
limit per transaction, or per day, or over a period time, and will require to refund Payer for unauthorized payments. Such fraudulent payments must be promptly reported to STARNET to prevent further authorized payments from any other financial institution. Payee’s financial institution will be responsible for reimbursing any unauthorized payments back to Payer’s financial institution, as Payee’s Provider is responsible for KYC of its customer.

S.5.2 Payer’s Provider is responsible to refund Payer in case of fraudulent, unauthorized Payments, however Payer’s Provider will be able to get it refunded by Payee’s Provider. Payer’s Provider will follow the required consumer protection laws.

S.5.3 In case of erroneous transaction, Payee’s financial institution will be responsible to process the refund from Payee, and pay back Payer’s provider.

S.5.4 All business payments require maker checker functions, and the Payer’s Provider will require 4 eyes to release a payment. Please refer liability section for the responsibilities and liabilities.

S.5.5 Consumer payments when initiated by Payee required authorization by Payer. If there is an erroneous payment, Payer’s institution can request Payee’s institution to return the payment.

**Justification for S.6:**

S.6.1 Managing and monitoring fraudulent patterns, and preventing the frauds is a critical component of STARNET. As STARNET receives all payments from all providers, it can easily lookup for fraudulent patterns and prevent such payments. Any unauthorized payments will be immediately notified to STARNET, so it can prevent any future payment to this account.

S.6.2 Payments happen between two STAR ACCOUNTS, no matter how many real accounts Payer or Payee has. So all transactions from/to Payer/Payee are stored and are used to detect fraudulent patterns.

S.6.3 All fraud information and alerts are sent in real-time.

S.6.4 Providers can share Reject Reason to the network, so STARNET uses that information to monitor and/or reduce further payments in future.

S.6.5 Fraud monitoring is conducted by STARNET, and all the payment messages are submitted using open XML message standards.

S.6.6 All Providers share the transaction to STARNET, so fraudulent patterns can be discovered.
S.6.7 All transactions are aggregated by STARNET for fraud monitoring.

**Justification for S.7:**

S.7.1 Payments are initiated and authenticated only from Provider’s solutions and channels. The payment data in transit, and at rest are encrypted. All Providers are connected via Virtual Private Network. The Payer gets notified of any payment request, and is required to authorize. Payer will have 30 minutes to stop any payment after authorization. Network monitoring will be in place and will be regularly audited for security. All network traffic will go via secured RMQPS connection.

S.7.2 Data will be retained for 7 years or more without any issue as the solution uses BIG DATA technologies. System will be hosted in SSAE-16 certified data center.

S.7.3 All Providers can continue to employ the same or higher level of risk management processes, procedures, architectures and policies they have put in place.

**Justification for S.8:**

S.8.1 The solution employs highly available, distributed, hyper scalable architecture and store any amount of data. Solution can grow from millions of transaction per day to billions of transactions per day.

S.8.2 Follows industry standard disaster recovery and business continuity plan.

S.8.3 The solution will have a farm of servers, engines, queues, and distributed storage available to process the requests. Most of the heavy lifting is done by Providers, and STARNET helps exchanging the request and updates.

S.8.4 Required resources will be dedicated for DR and BCP.

S.8.5 Regular security, penetration and BCP testing will be conducted regularly.

**Justification for S.9:**

S.9.1 Sensitive information is strictly managed by Providers, and is not shared. Only the payer’s and payee’s STAR ACCOUNTs are required to process a payment.

S.9.2 All account numbers, personal information are managed by Provider and is not shared outside. Only the payer’s and payee’s STAR ACCOUNTs are required to process a payment.
S.9.3 Only the payer’s and payee’s STAR ACCOUNTs are required to process a payment. Global Instructions that has the mapping of STAR ACCOUNT and the Provider are accessible only by Providers. No other sensitive information is required.

**Justification for S.10:**

S.10.1 Authentication by the Providers will follow their existing methods, such as Two-Factor Authentication, Finger Print, Face Recognition in addition to login/password. Providers are fully responsible to authenticate their users.

S.10.2 The process requires the Payee’s provider to have registered correct account under the customer’s STAR ACCOUNT in order to receive payment. Name match will be conducted, and the request is fully validated before actual money moves.

S.10.3 End-user Authentication is conducted by Providers using already established, proven, and industry standard methods.

S.10.4 Authentication by the Providers will follow their existing methods, such as Two-Factor Authentication, Finger Print, Face Recognition in addition to login/password. Providers are fully responsible to authenticate their users. In addition to Authentication, Business Users will have second authorization and Provider will have further risk controls to review and approve the payments.

S.10.5 End-user Authentication is conducted by Providers using already established, proven, and industry standard methods, across all payment channels supported by Provider.

S.10.6 Providers will have the flexibility to adopt and implement new technologies and methods in future.

**Justification for S.11:**

This solution once accepted, will define the Participation Requirements, almost similar to existing Requirements to participate in FedWIRE, SWIFT and ACH transactions.

S.11.1 Participation Requirements will be as good, or better than existing requirements in FedWIRE, CHIPS, SWIFT and ACH.

S.11.2 Participation Requirements will be as good, or better than existing requirements in FedWIRE, CHIPS, SWIFT and ACH.

S.11.3 Participation Requirements will be as good, or better than existing requirements in FedWIRE, CHIPS, SWIFT and ACH.
4. Speed (Fast)

**Self-assessed rating:**

<table>
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<th>Effectiveness Criteria</th>
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<tr>
<td>Speed (Fast)</td>
<td>F.1</td>
<td>Fast approval</td>
</tr>
<tr>
<td>Speed (Fast)</td>
<td>F.2</td>
<td>Fast clearing</td>
</tr>
<tr>
<td>Speed (Fast)</td>
<td>F.3</td>
<td>Fast availability of good funds to payee</td>
</tr>
<tr>
<td>Speed (Fast)</td>
<td>F.4</td>
<td>Fast settlement among depository institutions and regulated non-bank account providers</td>
</tr>
<tr>
<td>Speed (Fast)</td>
<td>F.5</td>
<td>Prompt visibility of payment status</td>
</tr>
</tbody>
</table>

**Justification for F.1:**
Payer’s Provider is required to ensure the Payer has enough funds available for the transaction, or must have an established credit facility. When the payment request comes to STARNET, check for good funds is already complete and the Payer’s Provider holds the fund in Payer’s account (cash or credit). STARNET will directly debit Payer’s Provider’s account at STARNET, and this will happen in a fraction of second.

**Justification for F.2:**
Both Payer and Payee Providers are required to have an Account with STARNET. The settlement and clearing of funds (Debiting Payer’s Provider and Crediting Payee’s Provider) will be handled in a fraction of a time.

**Justification for F.3:**
Upon Credit of the funds in Payee’s Provider, Payee’s Provider is required to post funds in Payee’s account instantaneously and will be available for use.
Justification for F.4:

F.4.1 All the settlements and clearance of funds happen in real-time per transaction. So netting is required. Each Payer’s Provider is required to have enough funds available the transactions posted by it. Providers can have credit facility with one or more Providers (Credit Providers). The solution recommends a funding officer at the Provider continuously monitor the balances 24/7/365 and make the funding arrangements.

F.4.2 The system doesn’t and shouldn’t differentiate participants at different time-zones, and will finalize the transaction as long as Payer’s Provider and Payee’s Provider can acknowledge.

F.4.3 Any deferral of payment must be handled by Payer’s Provider and the request should be sent to STARNET only when it is fully ready to complete the payment.

Justification for F.5:

F.5.1 Payer will receive the following notifications.
   a. Payment Request Notice (when initiated by Payee)
   b. Payment Acceptance/Approval Notice (only for Business Users)
   c. Payment Authorization Notice
   d. Payment Released Notice (Release by Payer’s Provider)
   e. Payment Debit Notice
   f. Payment Completion Notice

F.5.2 Payer will receive the following notifications.
   a. Payment Submitted Notice (when initiated by Payee).
   b. Payment Acceptance/Approval Notice (only for Business Users)
   c. Payment Authorization Notice
   d. Payment Credit Notice

5. Legal Framework

Self-assessed rating:

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<tr>
<td>Legal Framework</td>
<td>L.1</td>
<td>Legal framework</td>
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</table>
**Legal Framework**

| L.1 | Payment system rules | E | 5-37 |
| L.2 | Consumer protections | E | 5-37 |
| L.3 | Data privacy | VE | 5-37 |
| L.4 | Intellectual property | VE | 5-37 |

**Justification for L.1:**

L.1.1 Best legal guidelines from existing payment networks such as SWIFT, FedWire, ACH, etc. will be employed.

L.1.2 This will be done after solution is approved.

L.1.3 Refer to responsibilities and liabilities section. Further details will be completed after solution is approved.

L.1.4 Each Provider will strictly follow the application rules such as OFAC, BSA, FinCEN, AML and other Federal and State laws. Solution also helps sharing of such fraud discovery to other Providers.

L.1.5 There will be Provider’s regulated by other Jurisdiction, but it is their responsibility to comply with application local laws. This solution helps meet such compliance, for example, it includes provisions to support country specific requirements to process the payment.

**Justification for L.2:**

L.2.1 Responsibilities, Timing, Error Resolution Procedures, and other Processes and Procedures are well defined.

L.2.2 Best rules from existing payment networks such as SWIFT, FedWire, ACH, etc. will be employed. These rules will continuously evolve based on the input from all stakeholders.

L.2.3 Best rules from existing payment networks such as SWIFT, FedWire, ACH, etc. will be employed. These rules will continuously evolve based on the input from all stakeholders.

L.2.4 All payment requires Authorization from the Payer. Without that authorization money doesn’t move.
L.2.5 Error resolution and disputed payments have been well addressed above.

Justification for L.3:

L.3.1 If Payee requests fraudulent transaction, Payee’s Provider will be held responsible, as it is its duty to do KYC. If the Payer has authorized the transaction, then nobody else will be responsible post authorization. If there is a dispute between Payer and Payee after the Payment is finalized, it has to be resolved outside the system, and between the parties.

L.3.2 See L.3.1. Best rules from existing payment networks such as SWIFT, FedWire, ACH, etc. will be employed. These rules will continuously evolve based on the input from all stakeholders.

L.3.3 Best rules from existing payment networks such as SWIFT, FedWire, ACH, etc. will be employed. These rules will continuously evolve based on the input from all stakeholders.

Justification for L.4:

L.4.1 The relationship with Payer or Payee is completely managed by his/her Provider. No private data is required to complete the transaction, and the Provider is required to employ strict procedures (which are already present) to safe guard private information.

L.4.2 The solution requires only the virtual account numbers to complete the transaction. Data in in-transit and at-rest are encrypted. Provider will be responsible to safe guard information collected by it, from its customers.

L.4.3 Provider’s collected data will be used by Provider to authenticate the payments, KYC, and other existing legal rules. It is the Provider responsibility to safe-guard end user data.

L.4.4 End-user’s relationship is managed by Provider, and the end-user can seek the data privacy policy from its provider.

L.4.5 If Payee requests fraudulent transaction (including data breach), Payee’s Provider will be held responsible, as it is its duty to thoroughly conduct KYC. If the Payer has authorized the transaction, then nobody else will be responsible post authorization.

Justification for L.5:

This solution includes all best market practices, latest open technologies, and doesn’t include any third-party intellectual property. However, once approved, this solution will ensure there is no breach of intellectual property rights.
6. **Governance**

**Self-assessed rating:**

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<tr>
<th>Effectiveness Criteria</th>
<th>Effectiveness Criteria Self-Assessment (Check One)</th>
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<tbody>
<tr>
<td>Criteria Name</td>
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<tr>
<td>Governance</td>
<td>G.1</td>
<td>Effective governance</td>
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<td>Governance</td>
<td>G.2</td>
<td>Inclusive governance</td>
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</table>

**Justification for G.1:**

G.1.1 This solution will be governed by all stakeholders (who are elected Providers, Business and Consumer Representatives and Government Agencies), will continuously evolve, and apply best governing policies.

G.1.2 All policies will be publicly available.

G.1.3 The policies will include dispute resolution, new decision making and implementation procedures.

G.1.4 The policies, STARNET solution and Provider’s solutions will be open for audit and government regulations.

**Justification for G.2:**

G.2.1 Public interest will always be the top most priority. The commercial interest of Providers will be considered, but will not drive the implementation or the decision making, as long as the cost of providing such services is covered by the Providers.

G.2.2 The solution will have a governing body and advisory committee that has representation from all stakeholders.

G.2.3 The solution will have a governing body and advisory committee that has representation from all stake holders.
G.2.4 The governance of this system must be driven by the service provided to the end-users, and not by the financial power and the commercial interests of certain Providers. This kind of interest will limit the growth, evolution and openness of the system, and such influence must be highly reduced if not eliminated.

G.2.5 The governance system will have rules for conflicts of interest.
PROPOSER WRITTEN COMMENTS

Proposer appreciates the opportunity to respond and thanks QIAT who took great deal of time and effort in understanding the proposal and giving highly valuable comments.

QIAT has captured “Major Strengths” correctly and the proposer adds the additional strengths:

1. STARNET can support cross-border payments as it offers multi-currency accounts to purchase foreign currency and make payment to foreign payees. When all foreign currency payments are routed via STARNET, this network will give complete view of exports and imports to/from various countries, currencies, making a great policy and decision management tool for the government agencies.

2. STARNET has a fundamental philosophy of processing only Payer authorized transactions, and does not support Direct Debits. When there is a direct debit request, it gets converted to “Credit Transfer” request upon approval by payer.

3. STARNET uses hyper scalable, resilient, big data system, enabling it support any volume of transactions.

4. Existing deposit accounts can be used and transitioned to secure accounts (details of accounts are known only to depositor), enabling smooth transition to the new faster and secure payment system.

5. STARNET not only keeps the private data secret, but also notifies the account holders with all payment updates, making the system more transparent, and helps capturing fraudulent transactions.

6. Many value added services can be built over STARNET, consolidating all payments through a single system, further enabling historical payment transaction data for analytics, government policy and decision making.

7. SwapsTech will not be controlling STARNET, but recommends a group consisting of representatives from Federal Reserve Bank, SwapsTech, Larger Banks, Mid-sized Banks, Small regional Banks, Businesses, Consumers and Regulators govern the network.

QIAT has suggested certain areas of improvement and enhancement. Proposer’s comments are as below:

1. 30 Minutes Hold Time:

   As stated in the Q/A below, after payer authorizes the payment, payer’s provider must have to check for fraud and compliance screening which are more important than the speed of the
payment, and have dual approval control at the wire room which is a critical security procedure. In order to complete these fraud check, compliance screening and dual control security processes, this system is giving a maximum of 30 minutes to Payer’s provider, and will penalize for any delays beyond 30 minutes unless it requires more time to make a decision on a possible fraud or a hit. If the Payer’s provider takes only couple of minutes to complete the checks above and release the payment, payee will receive the payment near real-time, as the network by itself doesn’t require more than a second to process the payment once authorized.

So this 30 minutes is primarily given to the provider to conduct and complete the compliance and security procedures and also gives reasonable time for the initiator to cancel for any reason. Please note that STARNET will notify Payer based on his/her preferences when STARNET receives the “Credit Transfer” request, which is also a great fraud prevention tool and this hold time gives reasonable time for the Payer to request stop payment.

2. Settlement Approach:
   Please see the details of settlement process in the answer S.1 Risk Management below.

3. Messaging Standard:
   Please see the details in the answer E.4 Payment format standards.

4. Funding and adoption:
   As stated above, SwapsTech has interest and commitment from banks in USA to help build the platform once the proposal is accepted. As this is going to be very successful platform, securing funds is not a problem at all. Further adoption of this solution will be seamless, as the providers can integrate their systems with the network using their own resources or hire any vendors, and can gradually transition from their existing network to STARNET.

SwapsTech comments for the proposer’s ability to deliver proposed solution:

1. QIAT has noted that the solution lacks settlement, operating rules, security, legal and governance.

   The settlement process has been clearly explained under S.1. Risk management answer below, and the security questions have also been explained under the section S.

   Proposer agrees that this proposal lacks the details of operating rules, legal framework and governing rules, but any system needs to be designed and accepted first. These rules can be built while building the final solution. There are many existing networks which are mature, and legal experts will be engaged to finalize the rules of the network.

2. QIAT has also noted about the solution has not been built and raised concerns about the proposer’s ability to secure funding and complete the solution.

   SwapsTech has already built a payment system which are currently used by handful of US banks and is not proposing just an idea. Current solution is hyper scalable and has support for multi-currency accounts, real-time balance check, payment updates and many other features covered in the proposal. STARNET will be built using these modules.
As stated above, SwapsTech has interest and commitment from banks in USA to help build the platform once the proposal is accepted. As this is going to be very successful platform, securing funds is not a problem at all. Further adoption of this solution will be seamless, as the providers can integrate their systems with the network using their own resources or hire any vendors, and can gradually transition from their existing network to STARNET.

Proposer has answered QIAT questions and provided additional details below in support of its self-assessment. In places, where Proposer disagrees with QIAT’s decision, Proposer hopes the additional details will help QIAT review the decision.
APPENDIX A: QUESTIONS FOR PROPOSER

Ubiquity

U.1 Accessibility

– U.1.4: Can Regulated Non-bank Account Providers have direct access to the STARNET system and open Star Accounts? If yes, how?

**Answer:**
Both banks and regulated non-bank providers will have direct access to STARNET. Each participating institute will be able to open STARNET account. The funding and settlement process has been explained in S-1 below.

– U.1.5: How are Providers motivated to participate and make the solution available to end users?

**Answer:**
Providers will charge a fee for STAR Accounts, and shall charge a transaction fee. With the new payment solution, participant’s clients will be able to request money, feel safe about their account as they don’t have to share the details of the account, receive prompt notifications, be able to make payment faster and in a transparent way, and these benefits help the providers sell the service for certain fees. Also in order to stay competitive among other players, institutions will be forced by the market to provide faster payment solutions, or otherwise they will end up losing their business and clients.

Proposer believes that these criteria are addressed more than effectively.

U.2 Usability

– U.2.3 and U.2.4: How will the Solution ensure that providers make the Solution available to users 24/7/365 (e.g., despite settlement times and hours of operation) and that the end user experience is easy to use and accommodates the usability needs of individuals?

**Answer:**
The network runs 24/7/365. Upon the release by Payer’s provider, the payment is credited to Payee’s provider in real-time. The plug-in installed by Payee’s provider is now responsible to credit the payment to Payee’s account. As long as Payee’s provider system operates 24/7/365, credit to Payee’s account will be instantaneous, and the Payer will be notified promptly.

Proposer agrees that STARNET doesn’t enforce the FI’s to meet certain usability standards, but recommends to get them covered as part of participating requirements. Also transparency is enforced as the notifications are provided by STARNET to both the end users and the institutions. Along with these notes and support for 24/7/265, Proposer believes that these criteria are addressed more than effectively.

U.3 Predictability

– How will the Solution provide consistent baseline features through all channels, including those such as the call center?

**Answer:**
In page 13-15 of the original submission, proposal describes the initiation

1. from an online portal
2. from a smart phone device
3. by visiting branch or kiosk
4. by calling customer service center
5. by uploading a file containing batches of payment records
6. by calling a secure API to initiate payment

Irrespective of who initiates the request, the payment follows the same process after the payment gets approved by Payer. The process after Payer’s initiation or approval is as follows:

- Payer’s provider receives final approval of the payment by Payer.
- Payer’s provider validates, checks for fraud and releases the payment to network.
- STARNET receives the “CreditTransfer” request from Payer, network debits the payment from Payer Provider’s account and credits Payee’s Provider’s account.
- STARNET waits for Payee’s Provider’s confirmation of credit to Payee’s account.
- STARNET notifies Payer’s Provider about the confirmation of credit.

The payment origination process could be different as follows:

- **Payer initiates payment from Mobile or from Online Portal**: In case of P2P or P2B, payer submits Payment request to Payer’s provider. In case B2P or B2B, payment is dual approved, and the payment is submitted to Payer’s provider.

- **Payer initiates payment from Call Center or from a Bank’s branch**: In all cases of P2P, P2B, B2P or B2B, call center or the branch submits the payment from call center or branch channel, which will then go thru the same process above.

- **Payee initiated**: In case of Payee initiated requests, the request is first submitted for Payer’s approval. After Payer approves the payment, the process is same as above.

All participating institutions must meet the conformance testing requirements which enforces all baseline capabilities have been met for all type of channels. Proposer believes that these criteria are addressed more than effectively.

**U.4 Contextual data capability**

- What payment message standard will be used? How will attributes be added to the messaging “without limitation”?

**Answer:**

This network requires the following messages

- Credit Transfer Request (from Payers Provider to STARNET)
- Request for Payment (from Payees Provider to STARNET to Payers Provider) which get converted to Credit Transfer Request after approval by Payer.
- Payment Status Report (from STARNET to Payers Provider, from Payees Provider to STARNET)
- Payment Status Request (to STARNET from Payers Provider or Payees Provider)

[Please note that “Direct Debit Request” will not be supported as the fundamental philosophy behind this network is that not a penny moves without Payer’s approval.]

ISO 20022 supports Credit Transfer Request and Payment Status Report. While most of the attributes are supported, it doesn’t have support for dual authorization, billing details, and
etc. STARNET group will work with ISO body to help support the new attributes and new message types.

Proposer agrees he should have been more clear in the proposal. With the additional details, Proposer believes that these criteria are addressed more than effectively.

**U.5 Cross-border functionality**

— How will the Solution develop standards be developed for how messages will be translated cross-border so that there is consistency across all transactions (e.g. in the case of different time zones which time stamp will be used for transaction date)? What if certain fields/messages are not present in other geographies [request for money]? What is the message standard of STARNET that the partner bank needs to translate?

**Answer:**

Both domestic and international institutions must adhere to the same messaging standards (new version of ISO 20022) and the payment flow will be same for both the payments. The main difference in International payments is that certain countries may require additional information in order to accept the payment which needs to be collected at the source. As these attributes are different for each country, they will be captured in custom attributes, and will be validated by STARNET.

Each institution will implement to process the required messages. As ISO 20022 is an international standard, message translation is not required if the foreign Payee’s provider domestic network also supports the same standards. But when if their domestic payment network uses different standards, their internal system will translate the message to domestic standards. This will keep the STARNET simple and easy to be adopted by foreign institutions.

All timestamps will be recorded in GMT and the institutions are required to translate to their locale.

SwapsTech has extensive experience in cross-border payments, and the proposal not only delivers cross-border payments, but also addresses some of the challenges US depository institutions have in opening foreign currency accounts, as STARNET makes it easy for US regulated institutions to have a foreign currency account. With the above message interoperability comments, Proposer believes that this proposal addresses these criteria very effectively.

**U.6 Applicability to multiple use cases**

No questions

Proposer agrees with QIAT evaluation.

**Efficiency**

**E.1 Enables competition**

— E.1.2: How do consumers directly access and update the GIN repository? Does the GIN repository store the STAR Account and Provider of underlying account or does the GIN also store the bank account number?

**Answer:**

Only STARNET network participants will have access to GIN repository, and only they can update the registry.
GIN repository maintains global instructions and consists of the following attributes.
- STAR Account
- Account Holder Info
  - Name
  - Address
    - Address 1
    - Address 2
    - City
    - State
    - Country
    - Postal code
- Default Account
  - Institution ID
  - Account Number
- Sub Accounts
  - Sub Account (List>
    - Sub Account No
    - Institution ID
    - Account Number
- Notifications
  - Notification
    - Type [Email or Text or Phone]
    - Address [Phone number or Email Address]

Example:
ACME INC will have one STAR ACCOUNT named ACMEINCUSA which is mapped to default provider Bank-A account number Bank-A-No1.

ACME INC can also create different SUB ACCOUNTS, for example AR, AP, SERVICES, BILLING, etc. each mapping to one institution’s account.

When the Payee initiates a request from ACMEINC.AP, STARNET will lookup GIN by providing STAR ACCOUNT, name of the account holder, which will return the Institution ID and Account Number associated with AP sub account.

STARNET will use this information to request payment from institution associated with ACMEINC.AP

Proposer agrees with QIAT evaluation.
E.2 Capability to enable value-added services

Please articulate how the solution will facilitate (not only enable) the creation and integration of value-added services (e.g., standard API)? What types of value-added services does the proposer envision? What organizations might provide those services?

Answer:

(i) Institutions can offer API banking to businesses, so they can initiate payments to their vendors, and request payments from their clients.

(ii) Retail stores can have direct access to STARNET and request for money from STARNET account from the cashier terminal, which will trigger a request in Payer’s mobile device that he can approve and receive a receipt. This will eliminate exuberant fees charged by card companies and helps retailers receive cash at low fees.

(iii) Business can create multiple accounts with different sub-account mapping, which will enable better reconciliation of the accounts. These services could be provided by existing vendors and new vendors.

(iv) Government agencies will be able to view the foreign exports and imports, and will help in governmental policy/decision process.

(v) STARNET will have the complete database of transactions, which will help in fraud monitoring.

(vi) As STARNET receives “Payment Request” from payee, unpaid payments by payer could be used to calculate credit of payer. These data will be provided only to government approved credit monitoring agents.

All the above ideas can trigger birth to lot of new service providers.

Proposer believes all the criteria are addressed more than effectively.

E.3 Implementation timeline

No questions

SwapsTech has already built a payment system that can handle both domestic and cross-border payments. STARNET will be built using the same technologies and already built modules, so this is not going to be built from scratch. SwapsTech took less than two years to build this solution and is a top player providing cross border, cash management and payment solutions. So STARNET could be built in less than two year timeframe. Further SwapsTech will fund the project up to 50% and has secured interest from a consortium of banks which will also fund the project once the solution is approved. So Proposer believes all the criteria are effectively addressed.

E.4 Payment format standards

Please provide more details regarding how and why a proprietary standard will better suit the Solution than would any existing standard. Please also provide details on how that proprietary standard would meet the sub-criteria.

Answer:

E.4.1. STARNET will use a newer version of ISO 20022 standards and the group will work with ISO to support the requirements of this network. (Please refer the answer in U.4)

E.4.2. (Please refer the answer in U.5)
E.4.3. As this is an ISO standard, it is cost effective to adapt. However newer attributes need to be included in the current standard.

E.4.4. The standard will evolve in future as required, as this is controlled by international organization.

E.4.5. ISO 20022 is developed by ISO, and this group will work with ISO to support the requirements of this network.

With above additional details, Proposer believes these criteria are very effectively addressed.

E.5 Comprehensive

No questions

Proposer agrees with QIAT. Additional description in this document further confirms that these criteria are very effectively addressed.

E.6 Scalability and adaptability

- What are the projected volumes? What is the peak load capability? Please provide specific projections of demand and capacity, as well as stress tests.

  SwapsTech has developed a payment system that uses hyper scalable messaging system and big data store. We have tested with millions of requests, with 100 simulators creating 1000 requests per second. With twenty-five engines handling the requests, the system is resilient and “all” the messages were processed under 17 seconds. This system is designed to handle any volume of transactions and support whatever capacity is required.

- How will the Solution be updated? What is the perspective on planned release/review schedule?

  SwapsTech has one major release each quarter and maintenance releases each month. Product managers will review the change request with all stakeholders, prioritize and plans the release features.

With the above additional details, Proposer believes these criteria are very effectively addressed.

E.7 Exceptions and investigations handling

No questions

STARNET will always provide Payment Status Report message during the life cycle of the payment, and can also be requested on demand. Proposer agrees that this proposal doesn’t include messages for investigation, but suggests that STARNET will be a gateway for Payer and Payee communicate with each other for investigation purpose after the payment is complete. Payer institution can use this channel to request refund of erroneous and disputed transactions. As long the Payee has the funds, when the Payer institution requests the refund, Payee institution must block the fund and refund the money, even though this payment has been wrongly approved by Payer. But if the Payee doesn’t have enough balance, and doesn’t pay, then Payee institution should put a hold on the account and refund the Payer Institution if there is new funds within 30 days from the payment date, or otherwise Payer will lose the money.

With the additional description, Proposal believes that all criteria are addressed very effectively.
Safety & Security

S.1 Risk management

- S.1.2: How is institutional settlement risk addressed, e.g. transactions clear before netted transactions are settled? Please describe the step by step settlement approach. Are STAR Accounts at the Central Bank? Are you proposing the Central Bank run a 24/7/365 settlement system?

Answer:
STARNET participants bank and regulated non-bank will be having accounts in STARNET. STARNET will have an account at FRB which will be used to receive funds for STARNET account. Please note that Proposer assumes FRB will approve STARNET to have FRB account, but in case if it doesn’t STARNET will have an account opened at depository institution which will be funded by instead of FRB account.

Example:
[Start]
BANK-A has a STARNET account STARNET-BANK-A that currently has a balance of $0. BANK-A projects payment of $100,000,000 next day and funds STARNET-BANK-A account. When this funding is complete, BANK-A’s FRB account will be debited and STARNET’s FRB account will be credited.

BANK-A’s client approves a payment of $10,000 to STAR-ACCOUNT B.

BANK-A debits its client’s DDA account and credits its GL account, and requests STARNET to make a payment to STAR-ACCOUNT B.

STARNET looks up GIN registry and identifies the provider of the STAR-ACCOUNT B as BANK-B and the account BANK-B-DDA-1.

STARNET contacts BANK-B and validates the account.

STARNET debits STARNET-BANK-A and credits STARNET-BANK-B.

BANK-B debits its GL account and credit BANK-B-DDA-1.

[End]
All the participating institutions will monitor the balance at STARNET and fund accordingly.

In case of non-bank providers, they will be funding from their depository institution account to their STARNET account.

- S.1.4: While description outlines why fraud will be minimal, please describe the risk management framework for when it does occur. What happens if there is an account takeover?

Answer
STARNET is a private network which connects only the participating banks. As the banks have very highly secured network, authorization and approval process, fraudulent transactions will not happen in STARNET and is as secure as FedWire network. Account take over at the bank has the same risk as it is today and that is totally under bank’s control.

Proposer agrees that the initial proposal did not have the details of settlements. With the additional details here, Proposer strongly believes that the network is as secure as FedWire network, there is no additional risk is involved than what is present today, and these criteria are addressed very effectively.
S.2 Payer authorization

- What additional fields/parameters are enabled in a pre-authorized payment? Why was 30 minutes chosen as a time limit? Would the Solution support a longer time window to cancel preauthorization?

**Answer**

After payer authorizes the payment, payer’s provider must have to check for fraud and compliance screening which are more important than speed of the payment, and have dual approval control at the wire room which is a critical security procedure. In order to complete these fraud check, compliance screening and dual control security processes, this system is giving a maximum of 30 minutes to Payer’s provider, and will penalize for any delays beyond 30 minutes unless it requires more time to make a decision on a possible fraud or a hit. Payer’s provider may take only couple of minutes to complete the checks above, in which case the payment is much faster, and the network by itself doesn’t require more than a second to process the payment once authorized.

Payer’s provider can also have auto release procedure for the second and future payments after conducting fraud check, whitelist prescreened compliance lists, as the very first payment from the Payer to Payee has already passed compliance screening and verification.

Pre-authorizations can be cancelled before the Payer’s provider releases the wire to STARNET. But once it is released, the payment cannot be cancelled.

Proposer strongly believes that these criteria are very effectively addressed. QIAT notes that pre-authorized payments can’t be cancelled until the time of payment, but Proposer disagrees as they are simply pre-schedule payments and can be cancelled before the point in time when Payer’s provider releases the payment to STARNET. Further dual authorization for businesses is “very” much needed for security and many of SwapsTech bank and non-bank clients demand them. At the same time, Proposer agrees that small businesses may not have resources for dual approval for whom this security feature is optional. Today SwapsTech supports businesses with both dual control accounts and non-dual control accounts. So these criteria are very effectively addressed.

S.3 Payment finality

- The proposal states that the Payee’s institution is responsible for reimbursing any unauthorized payments back to Payer’s Provider. Please provide more details regarding when this rule would apply, what the process would be in a dispute, and what expectations exist for the timing of reimbursement?

**Answer**

As long as the Payer has approved the payment (assuming Payer’s provider network or Payer’s account is not compromised), the payment is considered valid, final and the Payer will not be reimbursed. However, if the Payer’s provider network or the Payer’s account is compromised, then the Payer’s provider will be responsible to reimburse Payer but no later than one business day, and recover the funds from Payee. Likewise, if the Payee’s network is compromised, and a request from Payee has been approved by Payer, and the Payee has been credited, then Payee’s provider institution will be responsible to reimburse Payee’s provider and recover the funds from Payee.

With the above additional details Proposer believes that these criteria are very effectively addressed.

S.4 Settlement approach

- How often, and when, does the Solution perform institutional settlement? How does it do so? Is STARNET moving money and developing a new real-time settlement mechanism?
– Please clarify how Providers’ STARNET accounts are expected to maintain loaded accounts at STARNET. How will this be efficient for financial institutions?

– Please provide more details that illustrate how settlement is based on Central Bank money.

**Answer: (copied from S1)**

STARNET participants bank and regulated non-bank will be having accounts in STARNET. STARNET will have an account at FRB which will be used to receive funds for STARNET account. Please note that Proposer assumes FRB will approve STARNET to have FRB account, but in case if it doesn’t STARNET will have an account opened at depository institution which will be funded by instead of FRB account.

Example:

[Start]

BANK-A has a STARNET account STARNET-BANK-A that currently has a balance of $0. BANK-A projects payment of $100,000,000 next day and funds STARNET-BANK-A account. When this funding is complete, BANK-A’s FRB account will be debited and STARNET’s FRB account will be credited.

BANK-A’s client approves a payment of $10,000 to STAR-ACCOUNT B. BANK-A debits its client’s DDA account and credits its GL account, and requests STARNET to make a payment to STAR-ACCOUNT B.

STARNET looks up GIN registry and identifies the provider of the STAR-ACCOUNT B as BANK-B and the account BANK-B-DDA-1.

STARNET contacts BANK-B and validates the account.

STARNET debits STARNET-BANK-A and credits STARNET-BANK-B.

BANK-B debits its GL account and credit BANK-B-DDA-1.

[End]

All the participating institutions will monitor the balance at STARNET and fund accordingly.

In case of non-bank providers, they will be funding from their depository institution account to their STARNET account.

With the above description, Proposer believes these criteria are very effectively addressed.

**S.5 Handling disputed payments**

– In unauthorized payments, does the Payee’s Provider always have to refund the payment? What is the process and timeframe?

– How does the Solution handle disputed, fraudulent and erroneous payments?

**Answer: (copied from S3)**

As long as the Payer has approved the payment (assuming Payer’s provider network or Payer’s account is not compromised), the payment is considered valid, final and the Payer will not be reimbursed. However, if the Payer’s provider network or the Payer’s account is compromised, then the Payer’s provider will be responsible to reimburse Payer but no later than one business day, and recover the funds from Payee. Likewise, if the Payee’s network is compromised, and a request from Payee has been approved by Payer, and the Payee has been credited, then Payee’s provider institution will be responsible to reimburse Payee’s provider and recover the funds from Payee.
Proposer agrees that this proposal doesn’t include messages for investigation, but suggests that STARNET will be a gateway for Payer and Payee communicate with each other for investigation purpose after the payment is complete. Payer institution can use this channel to request refund of erroneous and disputed transactions. As long the Payee has the funds, when the Payer institution requests the refund, Payee institution must block the fund and refund the money, even though this payment has been wrongly approved by Payer. But if the Payee doesn’t have enough balance, and doesn’t pay, then Payee institution should put a hold on the account and refund the Payer Institution if there is new funds within 30 days from the payment date, or otherwise Payer will lost the money.

With the additional description, Proposal believes that all criteria are addressed very effectively.

S.6 Fraud information sharing

- S.6.1: What information is shared among Providers beyond payment transactions (e.g., Providers notifying STARNET of fraudulent activity within an account before a payment is made)?

  **Answer:**

  STARNET maintains the historical payment patterns, and the payments to/from Payee and the payments to/from Payer. STARNET will monitor the transactions against a set of predefined patterns, and share those results to Payer’s provider. If Payer’s provider identifies the payment as fraudulent with the notes, this will information will be shared back to STARNET and the STAR ACCOUNT will be flagged for fraud. When there is a next payment, any payment from/to this STAR ACCOUNT will have carry higher fraud score when the payment fraud check is conducted.

- S.6.5: Please describe who (e.g., what types of stakeholders) will have access to what types of information for fraud monitoring and prevention. What differential access is supported? Please clarify how participants other than Providers can access the data.

  **Answer:**

  Please see answer S.6.1.

  Fraud information will be shared only to participants and government agencies. Participants will receive a fraud score and the description of fraud patterns found. Government agencies will be able to view all fraudulent transactions, accounts, patterns, and will also suggest new patterns to STARNET. STARNET will continuously research, monitor, update and add new fraud patterns.

With the above additional description, Proposer believes that all criteria have been addressed very effectively.

S.7 Security controls

- S.7.3: Given that current FI task practices and policies were not designed for 24/7/365 operations, how will the existing policies need to change?

  **Answer:**

  STARNET will operate 24/7/265 as all of these transactions are electronic and requires less or no human control. There will be staff available to support any issues in the network.

  We encourage all participating institutions to operate 24/7/265, but it is possible that some may not be able to participate 24/7/365. If the institution has limited operating hours, they will not be submitting payment requests to the network, but they will be receiving “Payment Request” from other Payees and will also receiving incoming payments.
Proposer believes that security controls are effectively addressed as the data is encrypted at transit and at rest. With all electronic systems, requests and responses are always validated. STARNET will have highest security standards and will only allow up to 10% increase in transactions per account on any given date by default. Any further increase in the volume per account needs to be requested thru participating institution to prevent fraudulent transactions.

S.8 Resiliency

- Please provide more detail on the Solution’s mechanisms and systems to support availability and reliability, in particular at peak transaction volumes.

**Answer:**

SwapsTech has developed a payment system that uses hyper scalable messaging system and big data store. We use three data centers, all of them are highly available and distributed. We have tested with millions of requests, with a farm of 100 engines processing a total of 100,000 requests per second. So the system is highly resilient, has auto retry mechanism, auto scaling capability, and auto load balancing capability. This system is designed to handle any volume of transactions and support whatever capacity is required.

S.8.1. STARNET will begin supporting 100,000 requests per second guaranteeing the process under 15 seconds. As the volume grows, this hyper scalable system can support millions of transactions per second.

S.8.2. SwapsTech has an approved BCP/DR plan which has satisfied many bank requirements. All servers, message engines are highly available, and load balanced. SwapsTech uses real-time replication of data which means, the data can be recovered till the last millisecond. SwapsTech’s messaging system is also resilient and has auto retry mechanism which ensures no message goes unprocessed. The system has been tested for penetration and vulnerability and certified by ethical hacker.

S.8.3. STARNET will have load balanced, hyper scalable, big data system, which ensures all data is processed successfully by a farm of servers. The engines and servers will be running in three different data centers. Failure of one data center, or some engines, servers are resources within a data center will not create an impact in the performance and SLA.

3.8.4. Please refer S.8.2 and S.8.3.

3.8.5. SwapsTech conducts regular BCP/DR testing, penetration and vulnerability testing, stress and load testing, and involves other interfacing systems. The same process will be followed with STARNET and Provider systems.

With the above additional details, Proposer believes these criteria are very efficiently addressed.

S.9 End-user data protection

No questions

S.10 End-user provider authentication

No questions

S.11 Participation

No questions

Additional Proposer Comments:
Proposer agrees that operating rules, legal and governing rules are not defined by Proposer but suggests best rules from existing networks be adopted. As the existing networks have mature rules, Proposer believes these criterion is very effective.

**Speed**

**F.1 Fast approval**
No questions

Additional Proposer Comments:
Proposer disagrees with QIAT that this criterion is not effective. The network can process millions of transactions, with each transaction guaranteed to be processed under 15 seconds. SwapsTech has developed a payment system that uses hyper scalable messaging system and big data store. We use three data centers, all of them are highly available and distributed. We have tested with millions of requests, with a farm of 100 engines processing a total of 100,000 requests per second. So the system is highly resilient, has auto retry mechanism, auto scaling capability, and auto load balancing capability. This system is designed to handle any volume of transactions and support whatever capacity is required.

That said, higher speed is supported by the network itself, but 30 minutes’ limit is given to Payer’s provider to run fraud check, compliance screening and other security check before releasing the final payment. It is not only the Proposer belief, but all the regulators requirement that speed cannot take over the security of payment. If the regulators agree to bypass (which is impossible), then this step can be totally eliminated.

As the network can process the payments under in less than a second, this criterion is “very effective” and the Proposer requests QIAT to review the decision.

**F.2 Fast clearing**
No questions

Additional Proposer Comments:
Proposer disagrees with QIAT that this criterion is not effective. The payment will be cleared in a fraction of a second as described in the comments F1 and S1. QIAT has correct noted in F3 that the payment is cleared in a fraction of a second. This criterion is “very effective” and the Proposer requests QIAT to review the decision.

**F.3 Fast availability of good funds**
No questions

Additional Proposer Comments:
This criterion is very effective as the good funds are available in a fraction of a second. Proposer requests QIAT to review the decision.
F.4 Fast settlement
No questions

Additional Proposer Comments:
Please refer the settlement process in S1. As the settlement and clearing of funds is handled in less than a second, this criterion is very effective.

F.5 Prompt visibility of payment status
No questions

Legal

L.1 Legal framework

Answer:
Our belief is that we need to have a strong design that meets the faster and secure payment requirements first.

L1.1. This network will employ the best legal guidelines from the existing payment networks such as SWIFT, ACH and FEDWIRE, and address any gaps or inefficiencies.

L1.2. The proposer is not a legal expert, but will engage legal experts after the solution is approved.

L1.3. The proposer is not a legal expert, but will engage legal experts after the solution is approved.

L1.4. STARNET is a network that facilitates payments. The providers or participants of the network will still be responsible to comply with existing rules.

L1.5. The proposer is not a legal expert, but will engage legal experts after the solution is approved.

As STARNET proposes to use mature, best of all legal rules from the existing networks, this criterion is very effective. Anything less than effective means that current legal rules have not been effective for decades. So the Proposer requests QIAT to review the decision.

L.2 Payment system rules

Answer:
Our belief is that we need to have a strong design that meets the faster and secure payment requirements. This network will employ the best legal guidelines from the existing payment networks
such as SWIFT, ACH and FEDWIRE, and address any gaps or inefficiencies. The proposer is not a legal expert, but will engage legal experts after the solution is approved.

L.2.1 Responsibilities, Timing, Error Resolution Procedures, and other Processes and Procedures are well defined.

L.2.2 Best rules from existing payment networks such as SWIFT, FedWire, ACH, etc. will be employed. These rules will continuously evolve based on the input from all stakeholders.

L.2.3 Best rules from existing payment networks such as SWIFT, FedWire, ACH, etc. will be employed. These rules will continuously evolve based on the input from all stakeholders.

L.2.4 All payment requires Authorization from the Payer. Without that authorization money doesn’t move.

L.2.5 Error resolution and disputed payments have been well addressed in S.5.

As STARNET proposes to use mature, best of all legal rules from the existing networks, and has addressed all the effectiveness criteria, this criterion is very effective. Anything less than effective means that current legal rules have not been effective for decades. So the Proposer requests QIAT to review the decision.

L.3 Consumer protections

L.4 Data privacy

Answer:

L3.1. Refer S.5 answer above.
L3.2. Refer S.5 answer above.
L3.2. Refer S.5 answer above.

Our belief is that we need to have a strong design that meets the faster and secure payment requirements first. This network will employ the best legal guidelines from the existing payment networks such as SWIFT, ACH and FEDWIRE, and address any gaps or inefficiencies. The proposer is not a legal expert, but will engage legal experts after the solution is approved.

As STARNET proposes to use mature, best of all legal rules from the existing networks, and has addressed all the effectiveness criteria, this criterion is very effective. Anything less than effective means that current legal rules have not been effective for decades. So the Proposer requests QIAT to review the decision.

L.4 Data privacy

L.4: Please provide more details regarding data privacy, including an approach to identify whether and how payment and related information can be collected and disclosed, consistent with applicable policy, law, and End User preference, and an approach, consistent with law, to secure information that should not be disclosed. In doing so, please specifically address how the Solution supports the five data privacy subcriteria.

Answer:
Please refer S.6 for the sharing of fraud information.

L.4.1 The relationship with Payer or Payee is completely managed by his/her Provider. No private data is required to complete the transaction, and the Provider is required to employ strict procedures (which are already present) to safeguard private information. No information will be shared by network to any third parties.

L.4.2 The solution requires only the virtual account numbers to complete the transaction. Data in in-transit and at-rest are encrypted. Provider will be responsible to safeguard information collected by it, from its customers.

L.4.3 Provider’s collected data will be used by Provider to authenticate the payments, KYC, and other existing legal rules. It is the Provider responsibility to safeguard end user data.

L.4.4 End-user’s relationship is managed by Provider, and the end-user can seek the data privacy policy from its provider.

L.4.5 Please refer answer S.5.

As STARNET proposes to use mature, best of all legal rules from the existing networks, and has addressed all the effectiveness criteria, this criterion is very effective. Anything less than effective means that current legal rules have not been effective for decades. So the Proposer requests QIAT to review the decision.

L.5 Intellectual property

- L.5: Please provide more details regarding intellectual property, including an approach to address any risks arising from third-party rights related to patents, trademarks, copyrights, and trade secrets. In doing so, please specifically address how the Solution supports the intellectual property subcriterion.

**Answer:**

This solution includes all best market practices, latest open technologies, and doesn’t include any third-party intellectual property. However, once approved, this solution will conduct a thorough search and research to ensure there is no breach of intellectual property rights.

As STARNET proposes to use mature, best of all legal rules from the existing networks, and has addressed all the effectiveness criteria, this criterion is very effective. Anything less than effective means that current legal rules have not been effective for decades. So the Proposer requests QIAT to review the decision.

**Governance**

G.1 Effective governance

- G.1: Please provide more details regarding effective governance, including decision and rule-making processes that are transparent and support both the Solution's objectives and Public Policy Objectives. In doing so, please specifically address how the Solution supports the four effective governance subcriteria.
Answer

G.1.1 This solution will be governed by all stake holders (who are elected Providers, Business and Consumer Representatives and Government Agencies), will continuously evolve, and apply best governing policies.

G.1.2 All policies will be publicly available.

G.1.3 The policies will include dispute resolution, new decision making and implementation procedures.

G.1.4 The policies, STARNET solution and Provider’s solutions will be open for audit and government regulations.

Proposer agrees that Governing Rules are not defined at present, but will adopt best of the rules from existing networks and governing bodies. Proposer believes that all the effectiveness criteria have been mostly addressed, keeping the governing body independent, to make the required decisions. Anything less than effective means that current governing rules have not been effective for decades. So the Proposer requests QIAT to review the decision.

G.2 Inclusive governance

Answer

G.2.1 Public interest will always be the top most priority. The commercial interest of Providers will be considered, but will not drive the implementation or the decision making, as long as the cost of providing such services is covered by the Providers.

G.2.2 The solution will have a governing body and advisory committee that has representation from all stake holders.

G.2.3 The solution will have a governing body and advisory committee that has representation from all stake holders.

G.2.4 The governance of this system must be driven by the service provided to the end-users, and not by the financial power and the commercial interests of certain Providers. This kind of interest will limit the growth, evolution and openness of the system, and such influence must be highly reduced if not eliminated.

G.2.5 The governance system will have rules for conflicts of interest.

Proposer agrees that Governing Rules are not defined at present, but will adopt best of the rules from existing networks and governing bodies. Proposer believes that all the effectiveness criteria have been mostly addressed, keeping the governing body independent, to make the required decisions. Anything less than effective means that current governing rules have not been effective for decades. So the Proposer requests QIAT to review the decision.
Faster Payments QIAT

PRELIMINARY ASSESSMENT

Proposer: Swapstech

Summary Description of Solution:
The Swapstech solution is a payment network called STARNET. End users create STAR Account IDs that are used in place of real accounts when sending and receiving payments (IDs can be email, phone or other registered ID). An individual or entity registers a STAR Account via the provider (which can be a bank or non-bank) and identifies the bank account into which payments should be deposited. These instructions are maintained in a central Global Instructions (GIN) repository and used for lookup by STARNET, the central network that connects providers. When a payment request is received for a STAR Account, the central network checks with a fraud engine, credits the receiver bank’s account in the network, and informs both sender and receiver banks about the finality of payment. The solution assumes that blockchain technology may be used as a general ledger but would be restricted within the network and not made public. In addition, the proposal describes the features and process flows of the solution but has not yet developed participant operating rules, legal framework, or governance arrangements.

EXECUTIVE SUMMARY OF THE PROPOSAL

■ Major strengths
  – A payer can initiate a payment with limited information by knowing the payee’s email addresses, phone numbers or other alias using the GIN in place of the payment account number. End users (businesses and consumers) own the STAR Account and can change their payment account at any time by updating the GIN through a provider, instead of calling vendors and other billers to update the account
  – Both banks and non-bank providers have direct access to STARNET; and existing deposit accounts can be used to transition to STAR Accounts
  – STARNET will run a fraud check on transactions based on global and historical transaction data across the network

■ Areas for improvement and enhancement
  – Participation requirements are needed in order to require and enforce a base level of usability and predictability in the solution for end users
  – The solution’s approach to settlement appears to be pre-funded accounts but additional detail would be helpful on how prefunded amounts are forecasted, what happens if a provider exceeds the prefunded amounts, if there would be risk exposure and how that risk exposure would be mitigated
  – The implementation plan provides a description of an integration effort and a timeline for provider to implement STARNET, as well as a prioritization of countries for connecting to a global network of banks. Further detail around funding, adoption, and an approach to achieving ubiquity would be helpful. The proposal notes there is “interest and commitment” from banks.

■ Use cases addressed
  – The solution addresses all four major use cases and includes cross-border capabilities.

■ Proposer’s overall ability to deliver proposed solution
The proposal provides an overview of the solution, and is waiting for the system to be designed and accepted before engaging experts to build the operating rules, legal framework and governance.

Swapstech has already built modules of the solution that are being used by a “handful” of US banks. Going forward, it will be critical for Swapstech to build on the “interest and commitment from banks” it has to secure funding and to develop a clear value proposition for providers to transition from their existing networks to STARNET.
ASSESSMENT
Ubiquity

U.1 Accessibility

Very Effective  Effective  Somewhat Effective  Not Effective

Rationale:
The solution facilitates payments to/from all types of payment accounts in Depository Institutions and Regulated Non-bank Account Providers (U.1.1). It provides real-time notifications on payment status (U.1.2), and supports multicurrency payments so long as the payer’s provider has a foreign currency account in the network and the payee has a STAR Account as well (U.1.3). As both banks and regulated non-bank providers have direct access to STARNET, the solution addresses the needs of the unbanked to send/receive payments (U.1.4). To adopt the solution, providers need to develop the plugin to connect with STARNET. The solution expects this to take 12 months to implement and test. Provider motivation to participate and make the solution available to end users is based on revenue opportunities from charging a fee for STAR account and transactions and a more compelling consumer value proposition from safer, more transparent and faster payments (U.1.5).

While payments can reach all payees with a registered STAR Account, it is not clear how non-STARNET account payees can be reached or enrolled (U.1.2). While the proposal indicates that STARNET will establish connections to other faster payment networks in various countries (pg 6), more details on how this could work would be helpful (U.1.6).

U.2 Usability

Very Effective  Effective  Somewhat Effective  Not Effective

Rationale:
The solution supports payment initiation from an online portal, mobile phone, branch, kiosk or phone (U.2.1). It provides the ability to initiate payment using an ID that can be phone, email or other identifier (U.2.2), and can be accessed 24/7/365 (U.2.3).

Financial institutions determine the end user experience and usability. The solution “recommends” participation requirements to ensure providers meet certain usability standards (U.2.4). However, no further guidelines are provided around requirements and enforcement that would ensure end users can initiate a payment 24/7/365, have visibility into payment status, and receive final availability of good funds, and have usability needs addressed.

U.3 Predictability

Very Effective  Effective  Somewhat Effective  Not Effective

Rationale:
The solution design ensures that its components and supporting parties deliver the defined baseline of core features (U.3.1). The solution uses standard messaging and protocols (though minimal details provided on the message format), and baseline features are supported across channels (U.3.3, U.3.4).
The communication of baseline features of the payment experience to end users is left up to each provider, without indications of requirements or guidelines by STARNET (U.3.2). Error resolution protections, rights and liabilities are the payer’s provider responsibility if payer initiated, and the payee’s provider responsibility of payment is payee initiated. The communication of error resolution protections, rights and liabilities of the payer and payee is up to each provider (U.3.5).

The proposal indicates that all providers “must meet the conformance testing requirements” to ensure baseline capabilities are met for each channel. However, no further guidelines are provided around requirements and enforcement to ensure a reliable and standard end user experience for the solution’s baseline features.

U.4 Contextual data capability

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**Rationale**

The solution includes contextual data capabilities as payment messages, including documents, bill details, and purpose of payment fields (U.4.1). It will use the ISO20022 standard and will work with the ISO body to support new attributes including dual authorization and billing details (U.4.3).

While the solution indicates data is sent and received as XML messages, further detail on ease of integration with business and personal finance systems would be helpful (U.4.2).

U.5 Cross-border functionality

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**Rationale:**

The solution does not yet support cross-border payments but has a plan to do so that involves STARNET being connected with a bank in each country that delivers the funds. The solution outlines a phased approach that starts with the U.S., then moves to Canada/Europe/Mexico, then to the G10 countries followed by the Asian countries (U.5.1). The solution depends on providers to ensure advance disclosure of costs, timing and risks with cross-border payments (U.5.3). It allows for conversion from one currency to another; the payer’s provider is required to have foreign currency accounts in STARNET for international transfers (U.5.4).

More details are required on how the solution will connect to various other faster payment networks in other countries (pg 6), particularly if Canada is the first wave and does not yet have a faster payment system or use of ISO20022 and the plan for gaining adoption of the solution by operators and providers around the world (e.g., payment limits, settlement cycles, pre-funding rules) (U.5.5)

U.6 Applicability to multiple use cases

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Rationale:
The solution supports a large number of use cases, including targeted use cases such as P2P payments, and is extensible to other use cases. The solution’s effectiveness in supporting business payments is unclear, pending more details on the solution’s messaging format and contextual data capabilities.

Efficiency

E.1 Enables competition

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Rationale:
The solution allows a choice of provider, enabling end users to switch providers by updating their payment account for receiving funds in the GIN repository (E.1.1, E.1.2). Providers must disclose total cost in advance to customers. Any provider, regardless of size or incumbency, can provide services as long as participation requirements are met (E.1.3, E.1.4).

The solution would be improved in allowing any entity to easily switch among providers or use multiple providers if the end user could access their STAR account without needing to go through their current provider or if participation requirements are in place to address the easy switching of providers (E.1.2).

E.2 Capability to enable value-added services

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Rationale:
The proposal outlines examples of value added services and allows providers regardless of size or incumbency to provide value added services (E.2.2). Providers must disclose to customers that value-added services are optional (E.2.3).

While the solution uses "open XML messaging standards, “more detail on how the solution would facilitate and enable providers to easily integrate through standard APIs or SDKs and turnkey solutions would be helpful (E.2.1).

E.3 Implementation timeline

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Rationale:
The proposal suggest the solution can be built in less than two years given some of the technologies and modules have already been built by Swapstech. In addition, funding will come from Swapstech (up to 50%) and a consortium of banks that have agreed to fund the solution once approved.
The solution outlines an implementation plan but does not discuss implementation and ubiquity hurdles, plans to overcome those hurdles, market share and growth projections, or timelines compared to historical examples (E.3.1).

**E.4 Payment format standards**

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Rationale:
The solution will use a newer version of ISO20022 with a commitment to working with the standards body to support the new attributes (E.4.1-E.4.5)

**E.5 Comprehensive**

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Rationale:
The solution covers all aspects of the end-to-end payment process, in partnership with providers (E.5.1). The technical design supports its features, though limited detail is provided on reliability, performance, information security protocols, operations, compliance and risk controls (E.5.2).

**E.6 Scalability and adaptability**

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Rationale:
The proposal states that the solution is “hyper scalable” and can grow volume by adding new servers; data will be stored in “big data” systems without a limit to growth. The proposal indicates a capacity to handle 100,000 requests per second, though more detail would be helpful on whether the time for processing messages at that level is less than 17 seconds or less than 1 second as indicated in other areas of the proposal (E.6.1-E.6.2). Swapstech uses a release each quarter to adapt the technical design over time (E.6.3).

**E.7 Exceptions and investigations process**

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Rationale:
The solution focuses on preventing errors upfront and provides notifications on the status of payments (E.7.1). The solution records and stores data for at least seven years (E.7.2) and includes the capability to detect fraud patterns or to aggregate exceptions data to spot patterns not visible at the level of an individual participant (E.7.3).

However, the solution does not provide additional tools such as messages, alerts and protocols to support the repair of exceptions (E.7.1), or to support the ability to trace and track incidents and exceptions and facilitate post-transaction evaluation (E.7.2).
Safety and Security

S.1 Risk management

Very Effective  Effective           Somewhat Effective    Not Effective

Rationale:
Settlement risk between providers is addressed through pre-funded accounts (S.1.2), the risk of fraudulent transactions is addressed by preventative measures such as not needing to know the account number to send payments (S.1.4), providers are liable for the risk of unauthorized transactions (S.1.5) and the solution and providers will be audited (S.1.6).

However, the solution does not provide a risk management framework (though it notes that the “best available” is to be taken from SWIFT and ACH). In particular, there is lack of detail on how operational risks are handled by STARNET and the GIN as the proposal only mentions operational risk handled by the provider (S.1.1, S.1.3).

S.2 Payer authorization

Very Effective  Effective           Somewhat Effective    Not Effective

Rationale:
The solution requires the payer to authorize each payment concurrently with payment initiation (S.2.1). For pre-authorized payments, the payer can make payments based on defined parameters and the payer can revoke the pre-authorization of payment up until it is released to STARNET. In addition, the dual authorization required for business payments is optional.

S.3 Payment finality

Very Effective  Effective           Somewhat Effective    Not Effective

Rationale:
A payer’s provider must approve each payment and assure good funds. This is followed by a hold on the account, funds taken from a credit facility or an overdraft if the account permits (S.3.1). Payment is final when STARNET debits the payer’s provider and credits the payee’s provider accounts (S.3.2). In a disputed payment, if the payer initiated the payment and the payer’s account is compromised, then the payer’s provider is responsible to reimburse the payer within one business day, and similarly if the request came from the payee and the payee’s account was compromised, the payee’s provider is responsible to reimburse the payer (S.3.3).

S.4 Settlement approach

Very Effective  Effective           Somewhat Effective    Not Effective
Rationale:
The solution states that the settlement between payer’s provider and payee’s provider is done by STARNET for every transaction, implying a real-time settlement approach. STARNET participating bank and regulated non-banks will have accounts in STARNET. STARNET will have an account at FRB which will be used to receive funds for STARNET account (assuming the FRB approves STARNET for an account (S.4.1). Providers pre-fund accounts into their STARNET account, presumably using existing payment systems to move money from the provider account to the STARNET account. Then payments made within STARNET are settled in real-time through the STARNET ledger, essentially managing inter-provider credit and liquidity risk by the payer’s provider always having good funds available in the account held at STARNET (S.4.2). In addition, the solution states that funds are settled in Central Bank money (S.4.3).

However, additional detail would be helpful on how prefunded amounts are forecasted, what happens if a provider exceeds the prefunded amounts before the next funding cycle (e.g., over the weekend), if there would be risk exposure and how that risk exposure would be mitigated (S.4.2).

S.5 Handling disputed payments

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Rationale:
The solution’s approach to reasonably protecting businesses, government and consumer payers against losses related to Fraud is based on prevention of fraud and errors (S.5.4., S.5.5). In a disputed payment, if the payer initiated the payment and the payer’s account is compromised, then the payer’s provider is responsible to reimburse the payer within one business day, and similarly if the request came from the payee and the payee’s account was compromised, the payee’s provider is responsible to reimburse the payer. A request can be made through STARNET for prompt voluntary return of funds from the payee (S.5.3).

More detail is needed on the requirements, process and timeframes for addressing payments disputes as the proposal references an investigation process (S.5.1).

S.6 Fraud information sharing -

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Rationale:
The solution sees payments across the network, runs a fraud check against a database of past transactions during processing, and uses that to manage and monitor fraudulent patterns. STARNET is the central authoritative trusted repository to receive all transactions from providers and to spot patterns that may not be visible at the level of individual Participant (S.6.1, S.6.6, S.6.7). STARNET share suspicious payments with providers (S.6.3), and provides information sharing mechanisms supporting differential access to content for providers and Government agencies (S.6.5).

The proposal does not provide details regarding what information related to fraud is shared between providers and STARNET (e.g., providers notifying STARNET of fraudulent activity within an account before a STARNET payment is made) (S.6.1). More details would also be
helpful regarding how data from outside providers could be used for fraud information sharing (S.6.2).

S.7 Security controls

<table>
<thead>
<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale:</td>
<td>The solution encrypts data in transit and at rest. Network traffic goes via RMQPS connection (S.7.1). However, technical access components and controls are not all addressed including data quality and integrity, data breach prevention and detection (S.7.1). While the solution notes that data will be retained for 7 years, operational and procedural components and controls not detailed beyond the SSAE-16 certified data center (S.7.2). Managerial policies and oversight detailed by the proposal only addressed that of providers but not STARNET (network and GIN) (S.7.3)</td>
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</tbody>
</table>

S.8 Resiliency

<table>
<thead>
<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale:</td>
<td>The proposal indicates a capacity to handle 100,000 requests per second (S.8.1) through the use of distributed, “hyper scalable” architecture. Approved business continuity and disaster recovery plans exist and the system has been tested for penetration and vulnerability (S.8.2, S.8.4, S.8.5). The original proposal states an assumption that the blockchain ledger may be used, but provides no further detail on this approach (pg 10)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

S.9 End-user data protection

<table>
<thead>
<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale:</td>
<td>Providers must protect their customers’ sensitive information. Data is encrypted in transit and at rest (S.9.1). The solution protects sensitive information needed for account and transaction setup by enabling payers and payees to initiate and receive payment using STAR Account IDs, without knowing Account numbers at any point throughout the end-to-end process (S.9.2, S.9.3)</td>
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</table>

S.10 End-user/provider authentication

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<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
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</thead>
</table>
Rationale:

The solution relies on authentication by the provider using existing methods such as two factor authentication across all delivery channels (S.10.1). Mechanisms to ensure the payment reaches the intended payee include the lookup STARNET makes to the GIN to identify the payee and provider through the STAR Account ID (S.10.2).

Authentication based on risk-weighting of the transaction, re-authentication approach and decommissioning of old Authentication models is not addressed and left up to the provider (S.10.4-S.10.6).

S.11 Participation requirements

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<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
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</thead>
</table>

Rationale:

Participation requirements are not yet defined by the solution but proposal indicates the requirements will be as good as or better than existing requirements in FedWIRE, SWIFT and ACH transactions.

Speed (Fast)

F.1 Fast approval

<table>
<thead>
<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
</tr>
</thead>
</table>

Rationale:

The solution indicates that the network processes payments in under one second, but STARNET allows providers a maximum of 30 minutes for fraud, compliance, security checks. The solution will need to rely on operating rules to ultimately control the timing of approval.

F.2 Fast clearing

<table>
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<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
</tr>
</thead>
</table>

Rationale:

The solution indicates that the network exchanges payment information in under one second, but STARNET allows providers a maximum of 30 minutes for fraud, compliance, security checks. The solution will need to rely on operating rules to ultimately control the timing of approval.

F.3 Fast availability of good funds to payee

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<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
</tr>
</thead>
</table>
Rationale:
A payer has 30 minutes to stop any payment after authorization; after this period, in a fraction of a second, STARNET directly debits the payer’s provider’s account at STARNET and credits the payee’s provider account at STARNET.

F.4 Fast settlement among depository institutions and regulated non-bank account providers

<table>
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<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
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</table>

Rationale
The proposal states that settlement happens in real-time per transaction through pre-funded accounts with STARNET. Thus, the settlement for moving money into STARNET Accounts is constrained to the operating hours and timing of current payment systems, however, once money is moved into the STARNET Account, settlement is within seconds. Regarding the settlement approach, more information is needed on how prefunded amounts are forecasted, what happens if a provider exceeds the prefunded amounts, if there would be risk exposure and how that risk exposure would be mitigated (F.4.1).

F.5 Prompt visibility of payment status

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<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
</tr>
</thead>
</table>

Rationale:
STARNET notifies providers in real time; providers can then make that information visible to end users. Visibility of payment status is within 5 seconds of completion for each step.

Legal

L.1 Legal framework

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<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
</tr>
</thead>
</table>

Rationale:
The proposal states that the legal framework will be built only after the approval of the solution and indicates that it will use best legal guidelines from existing payment networks.

The proposal acknowledges a need for a Legal Framework and sets out a path to complete it, but it is not yet complete and not enough detail is provided on the outlines of a framework. The QIAT has interpreted the Effectiveness Criteria such that solutions at this stage of development earn a rating of “Somewhat Effective.” This rating does not mean that “current legal rules have not been effective for decades.”
L.2 Payment system rules

<table>
<thead>
<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
</tr>
</thead>
</table>

Rationale:
Some Payment Rules are defined throughout the proposal (e.g., payment finality, authentication). Legal responsibility for authorization from payer is with the payer’s provider. Error resolution is addressed in S.5.

The proposal acknowledges a need for Payment System Rules and sets out a path to complete it, but it is not yet complete and not enough detail is provided on the outlines of a framework. The QIAT has interpreted the Effectiveness Criteria such that solutions at this stage of development earn a rating of “Somewhat Effective.” This rating does not mean that “current legal rules have not been effective for decades.”

L.3 Consumer protections

<table>
<thead>
<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
</tr>
</thead>
</table>

Rationale:
The provider for whatever entity initiates an unauthorized transaction is responsible for that transaction (payee or payer). However, disputes between payer and payee must be resolved outside the solution. The proposal states that the legal framework (L.3.1) and participant rules (L.3.2) are not yet developed.

The proposal acknowledges a need for Consumer Protections and sets out a path to complete it, but it is not yet complete and not enough detail is provided on the outlines of a framework. The QIAT has interpreted the Effectiveness Criteria such that solutions at this stage of development earn a rating of “Somewhat Effective.” This rating does not mean that “current legal rules have not been effective for decades.”

L.4 Data privacy

<table>
<thead>
<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
</tr>
</thead>
</table>

Rationale:
The solution relies on providers for data privacy. It does not address limitations on end users’ or providers’ collection of data and use or disclosure of payment data to third parties (L.4.1). The proposal describes a data security approach through encryption in transit and at rest, but does not describe operational procedures and policies to secure data at end user and provider locations or at STARNET and in particular the securing of the GIN (L.4.2). Providers are responsible for the nature and type of end user data required as well as how end users get visibility into data collected on them as well as approach to data breaches (L.4.3, L.4.4).

The proposal acknowledges a need for data privacy and sets out a path to complete it, but it is not yet complete and not enough detail is provided on the outlines of a framework. The QIAT has interpreted the Effectiveness Criteria such that solutions at this stage of development earn a rating of “Somewhat Effective.” This rating does not mean that “current legal rules have not been effective for decades.”
L.5 Intellectual property

<table>
<thead>
<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
</tr>
</thead>
</table>

Rationale:
The solution states that no third-party intellectual property is included, but that the proposer will do the work to ensure no breach of intellectual property rights after approval of the solution.

Governance

G.1 Effective governance

<table>
<thead>
<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
</tr>
</thead>
</table>

Rationale:
The solution states that it assumes a governing body and advisory body consisting of all parties and stakeholders will be created and that the subcriteria will be met.
The proposal acknowledges a need for effective governance and sets out a path to complete it, but it is not yet complete. The QIAT has interpreted the Effectiveness Criteria such that solutions at this stage of development earn a rating of “Somewhat Effective.” This rating does not mean that “current governing rules have not been effective for decades.”

G.2 Inclusive governance

<table>
<thead>
<tr>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not Effective</th>
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</thead>
</table>

Rationale:
The solution states that it assumes a governing body and advisory body consisting of all parties and stakeholders will be created and that the subcriteria will be met.
The proposal acknowledges a need for effective governance and sets out a path to complete it, but it is not yet complete. The QIAT has interpreted the Effectiveness Criteria such that solutions at this stage of development earn a rating of “Somewhat Effective.” This rating does not mean that “current governing rules have not been effective for decades.”
## APPENDIX A: ASSESSMENT SUMMARY

### UBIQUITY

<table>
<thead>
<tr>
<th>Topic</th>
<th>QIAT Assessment</th>
<th>Proposer Self-Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.1: Accessibility</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>U.2: Usability</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>U.3: Predictability</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>U.4: Contextual data capability</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>U.5: Cross-border functionality</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>U.6: Multiple use case applicability</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

### EFFICIENCY

<table>
<thead>
<tr>
<th>Topic</th>
<th>QIAT Assessment</th>
<th>Proposer Self-Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.1: Enables competition</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>E.2: Capability to add value-added services</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>E.3: Implementation timeline</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>E.4: Payment format standards</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>E.5: Comprehensive</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>E.6: Scalability and adaptability</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>E.7: Exceptions and investigations process</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

### SAFETY AND SECURITY

<table>
<thead>
<tr>
<th>Topic</th>
<th>QIAT Assessment</th>
<th>Proposer Self-Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.1: Risk management</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>S.2: Payer authorization</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>S.3: Payment finality</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>S.4: Settlement approach</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>S.5: Handling disputed payments</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>S.6: Fraud information sharing</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>SAFETY AND SECURITY (cont’d)</td>
<td>Very Effective</td>
<td>Effective</td>
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<tr>
<td>-----------------------------</td>
<td>----------------</td>
<td>-----------</td>
</tr>
<tr>
<td>S.7: Security controls</td>
<td></td>
<td>〇</td>
</tr>
<tr>
<td>S.8: Resiliency</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>S.9: End-user data protection</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>S.10: End-user/provider authentication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.11: Participation requirements</td>
<td>〇</td>
<td></td>
</tr>
<tr>
<td>SPEED (FAST)</td>
<td>Very Effective</td>
<td></td>
</tr>
<tr>
<td>F.1: Fast approval</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>F.2: Fast clearing</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>F.3: Fast availability of good funds to payee</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>F.4: Fast settlement</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>F.5: Prompt visibility of payment status</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>LEGAL</td>
<td>Very Effective</td>
<td></td>
</tr>
<tr>
<td>L.1: Legal framework</td>
<td>〇</td>
<td></td>
</tr>
<tr>
<td>L.2: Payment system rules</td>
<td>〇</td>
<td></td>
</tr>
<tr>
<td>L.3: Consumer protections</td>
<td>〇</td>
<td></td>
</tr>
<tr>
<td>L.4: Data privacy</td>
<td>〇</td>
<td></td>
</tr>
<tr>
<td>L.5: Intellectual property</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>GOVERNANCE</td>
<td>Very Effective</td>
<td></td>
</tr>
<tr>
<td>G.1: Effective governance</td>
<td>〇</td>
<td></td>
</tr>
<tr>
<td>G.2: Inclusive governance</td>
<td>〇</td>
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</tbody>
</table>

✓ = QIAT Assessment  〇 = Proposer Self-Assessment
APPENDIX B: PROPOSER RESPONSE TO QIAT ASSESSMENT

SwapsTech is a financial technology startup firm that has built a cross-border, multi-currency payment platform, supporting both outgoing and incoming payments, and has successfully delivered to banks and non-banks in USA.

The technology chosen by SwapsTech allows the system to hyper scale, with 100% straight through processing with manual control when required on exceptions. SwapsTech seamlessly integrates with legacy systems using decade old methods interfacing, and the latest APIs using its plug-play architecture, supporting any type of message, systems, and technologies.

The faster payment system proposal here builds upon the same powerful technology to provide seamless payment experience to the USA and global customers, keeping the transparency, speed, support for invoices, and many more features without compromising security, regulatory and compliance requirements as outlined in the proposal.

SwapsTech has received funding commitment from a consortium of banks in USA in support of extending the current platform to create a new platform STARNET. So receiving funds will never be a problem when we are building an excellent platform with lot of power and scale, that is already proven to be a success.

SwapsTech agrees that it has not provided legal and governance of this network, but has suggested that the rules from the current networks which are already working well will be adopted and/or improved.

SwapsTech is ready to offer its technology and system, make it available to the industry and governed by a consortium of parties led by Federal Reserve Bank and SwapsTech.

The following are the additional comments from SwapsTech for the criteria that received lower ratings.

**U.5: Cross-border functionality**
SwapsTech’s proposal addresses cross-border payments very effectively, and SwapsTech is an expert in this field, as SwapsTech is already providing cross-border payment platform today. SwapsTech has proposed multi-phased roll out to different countries, as a single roll out to all countries at the same time will lead to disaster. For this reason, the proposal can’t be considered somewhat effective, as this is smarter risk management philosophy while rolling out a larger platform.

Further, we can’t expect each country implement the same messaging standard, and help the proposal addresses it by creating adapters that converts messages from ISO20022 to other formats and vice-versa.

So the proposer believes this criterion has been addressed “Very Effectively”.

**S.7: Security controls**
In addition to the security in technical infrastructure, network and communications, SwapsTech’s proposal mandates maker- checker function. So this criterion has been addressed effectively, if not very effectively.
S.11: Participation requirements
SwapsTech has not invested its time and money on the legal framework, and has suggested we will adopt the best rules, framework and requirements from the existing network(s) which are very mature. So this criterion has been effectively addressed unless the current rules in the existing network(s) are not up to standard which is not the case. So this criterion has been addressed effectively, if not very effectively.

L.1: Legal framework
SwapsTech has not invested its time and money on the legal framework, and has suggested we will adopt the best rules, framework and requirements from the existing network(s) which are very mature. So this criterion has been effectively addressed unless the current rules in the existing network(s) are not up to standard which is not the case. So this criterion has been addressed effectively, if not very effectively.

L.2: Payment system rules
SwapsTech has not invested its time and money on the legal framework, and has suggested we will adopt the best rules, framework and requirements from the existing network(s) which are very mature. So this criterion has been effectively addressed unless the current rules in the existing network(s) are not up to standard which is not the case. So this criterion has been addressed effectively, if not very effectively.

L.3: Consumer protections
SwapsTech has not invested its time and money on the legal framework, and has suggested we will adopt the best rules, framework and requirements from the existing network(s) which are very mature. So this criterion has been effectively addressed unless the current rules in the existing network(s) are not up to standard which is not the case. So this criterion has been addressed effectively, if not very effectively.

L.4: Data privacy
SwapsTech has not invested its time and money on the legal framework, and has suggested we will adopt the best rules, framework and requirements from the existing network(s) which are very mature. So this criterion has been effectively addressed unless the current rules in the existing network(s) are not up to standard which is not the case. So this criterion has been addressed effectively, if not very effectively.

G.1: Effective governance
SwapsTech has not invested its time and money on the legal framework, and has suggested we will adopt the best rules, framework and requirements from the existing network(s) which are very mature. So this criterion has been effectively addressed unless the current rules in the existing network(s) are not up to standard which is not the case. So this criterion has been addressed effectively, if not very effectively.

G.2: Inclusive governance
SwapsTech has not invested its time and money on the legal framework, and has suggested we will adopt the best rules, framework and requirements from the existing network(s)
which are very mature. So this criterion has been effectively addressed unless the current rules in the existing network(s) are not up to standard which is not the case. So this criterion has been addressed effectively, if not very effectively.
SWAPSTECH PROPOSAL

TASK FORCE ASSESSMENT COMMENTS

Please share your concerns about this proposal’s assessment against the Effectiveness Criteria.

U2 and U3 - usability and predictability - are cited as areas for improvement; as such, they should be rated lower - "somewhat effective."

E7 - exceptions and investigations process and S1 - risk management - based in the cited omissions, these ratings should be lower - "somewhat effective."

S4 - settlement - is cited as an area for improvement; should not be rated "effective."

S5 - handling disputed payments and S6 - fraud information sharing - is calling for more detail in the assessment commentary; these should be rated one level lower.

Legal and governance framework - again I disagree with the arbitrary QIAT rating as this is still a work-in-process; ratings should be "not effective" at this time.

U.4. Contextual data capability should be “very effective” not “effective.” This solution is one of the more robust implementations of the possibilities offered under ISO 20022. (See E.4.) Additionally, the ability to have sub-accounts is VE.

Efficiency: It is a nice addition that this solution can allow for a second authorization by a payer, in instances where there are multiple entities that must sign off on a payment—i.e., businesses.

S.4. would be “very effective,” in our opinion, if the Fed did allow for accounts at the Fed to control settlement risk (as opposed to QIAT’s current “effective” rating). The same comment relates to S.11: if the Fed participates, then the proposal is “very effective.” Otherwise, it is only “somewhat effective.”

G.2. Inclusive Governance: We like a governance structure that includes stakeholders from across the payments ecosystem. The QIAT gave the proposal a “somewhat effective” in G.2. Inclusive Governance, but only because the details of the plan were limited. Nonetheless, the proposed framework is far more inclusive than is the case with solutions that only use industry to populate a governance body. Thus, we rate it “effective.”

Broadly speaking, SwapsTech is an excellent solution. It is inclusive (payment initiation by many different means, accepts cash as an input), it is quick, it controls for settlement risk via the common network, it has dual authentication and transaction authentication. A key insight, though, is that this strong solution requires extensive participation by the Fed. To RP, that is not a reason to discount the viability of this solution. It is, however, a reason to support a strong role by the Fed!

The proposal is not in conformance with the requirements of a full solution proposal. The requirements were designed to ensure that McKinsey and Task Force time and resources are focused on end-to-end solution proposals that can be thoroughly and credibly assessed against the criteria. This proposal does
not meet the requirements. Proposal has answered all sections of the template but in many cases the response does not provide information that would allow the QIAT to evaluate the proposal. The Proposal Template included instructions for Part C: Self-Assessment against Effectiveness Criteria that asked proposers to include a "detailed discussion of why the rating is justified and how the solution meets each criterion" (page 22 of template). It does not include specific information in Part C as to how or why the proposed solution meets each of the criteria. As a result, the QIAT is unable to evaluate the solution with the information provided. Altering the existing process defined to offer an opportunity for the proposer to include more explicit information in its submission to make the proposal "assessable" would be unfair to proposers who provided complete proposals before the submission deadline. A few of the reasons why the proposal did not meet the requirements are as follows: The solution did not include cross-border payments for B2B, B2P, P2B, and P2P. The solution has no risk management framework, and no fraud sharing details. The solution's re-authorization is not included and left to providers. The solution’s legal and governance frameworks are incomplete.

Please submit any comments about this proposal’s assessment against the Effectiveness Criteria.

In my opinion, the QIAT assessment was too soft on the theoretical nature of the proposal. The proposal is unfunded. It is weak in the areas of regulations, governance and legal framework. The Implementation description is also light. It is easy to put forward a solution when it is literally a proposal only.

Agree as assessed. While the solution is holistic in its approach and addresses most (if not all) of the requirements, detail to substantiate the "what" and especially the "how" is lacking in many parts of the solution proposal.

There were too many inconsistencies (or errors) between the self assessment and McKinsey's assessment including in appendix A to make a truly fair determination as to the appropriateness of McKinsey's assessment. If it is a result from the proposer simply not making modifications to their own self assessment after the initial McKinsey feedback, my apologies to McKinsey. E.4 is notable since McKinsey's very effective is stronger than the proposer’s own self assessment of effective (this was true in a couple of other proposals). That would seem to lend additional credibility to McKinsey's independent assessment but it is not clear if it is due to McKinsey's truly independent view or another missed chance of the proposer to ramp up their self assessment. Or, it could be simply two valid opinions. So, with some pause, I agree.

Agree that the proposal lacks specifics on participation requirements, governance and legal framework. It is unclear how unbanked consumers would enroll in the system. The dispute handling process also needs more specific timelines, and consideration of how to handle liabilities for victim-assisted fraud.

Legal and governance criteria need a lot of work to meet the criteria, as pointed out by the QIAT.
There's a ton of work to be done before this solution can be introduced to the market, and there's an even greater amount of effort required to align all the participants and competing (existing) payments systems to ensure its viability. QIAT got it right.

System is not fully designed or operational. Operating Rules, legal framework and governance models are not developed or communicated in the proposal.

1) Providers can be non-banks and banks (2) can facilitate account transfers for smaller FIs which takes away some constraints (3) FI can put a premium on spread on currency exchange.

Appears to be “vaporware”—very conceptual. Lacks many of the key business, rules, regulation and governance—is pushed to the FED—not much thought put into how to effectively address. 30 minute time factor is limiting, along with push back on pre-authorizations and lack of flexibility in payments process. Needs a lot of work before being able to bring a viable solution in the market.

Although SwapsTech is innovative using their virtual bank account reality model, it does support the use cases, I think it still has a huge internal road map of development in the faster payment space. The model uses virtual STARNET accounts and any user is subject to many of their internal requirements (e.g., funding, directory), which among the many requirements to belong to their network, has pre-defined who is liable for each type of transaction depending on who initiated the transaction. Even considering further in the implementation stage proposal there is no essence, as the system and components are not yet truly developed.

They also have some strict requirements as part of what would make the solution work: requiring "require provisions and special voting power...", requesting a “loan” for further development which will be re-paid from the solution fees income, timeline does not seem to support all the development needed for their solution, Payment processing - hold time of “30 minutes” which seems not align with Faster Payments, but they are claiming is for the benefit of compliance and security procedures.

Agree with the overall assessment. There needs to be more information on the "how" processes and fraud prevention as this lacked throughout the proposal. I also believe that legal and governance needs more as this area is lacking specifics.

Accessibility is too highly rated as it is not clear how the solution will support or reach ubiquity – the ability for any payer to make a payment to any account in the US real-time; and even for on-network accounts, full adoption and enrollment is not clear. Prompt visibility of payment status seems too high, as the rating is based on system messages to providers, not consistent messages to end-users. Legal and governance sections are rated too highly as neither is developed and communicated in the proposal.

If anything, the assessment was more positive than might be expected because of the necessity to finalize an architecture, technical design, and perform against that design. Much of the proposal appears aspirational.

Permissioned blockchain ledger with central directory. Easy addressing phone # or email. Usability not specified. Settlement unclear.
I believe that taken at face value the proposal was assessed properly. I think the level of FRB involvement they desire may be a challenge. I like how the proposal can leverage existing Financial Institutions and infrastructure.

**TASK FORCE SOLUTION-ENRICHING COMMENTS**

**Ubiquity**

The solution could be enriched if it provided a strategy for enrolling end-users into the STARNET network for the banked, unbanked and under-banked. The solution could be enriched if the proposal provided how STARNET accounts are funded and the timing of when funds are made available within the STARNET account to transact.

Not designed to meet needs of unbanked.

Requesting FRB to be governing body.

No front end for FIs to use.

Weak value proposition for smaller FIs.

Since central bank involved, could hinder rapid adoption due to needing to set up infrastructure, etc.

Also, debit brands and networks would be very resistant.

I do not think this meets all use cases. Who will be the governing body?

Describe adoption plan to enable reach to all bank accounts in the US. Describe what contextual data has been outlined for the proposal that all parties will consistently utilize.

Currently, a few core service providers control a lot of what products small and medium financial institutions are able to provide. In order to be successful, STARNET will need to connect with many of these providers. To date, these companies have been unwilling to do this without significant compensation choosing instead to provide their own solutions. I would like to see a road map for how you will be able to work with these core providers in rolling out your solution and thus have it used by small to medium-sized financial institutions.

There are some lingering questions about the solution’s ubiquity. This proposal was a bit light on the technical details. Without further detail it is hard to ask in-depth questions. One question is, how are non-starnet account holders identified, reached and enrolled if money was sent to them?

**Efficiency**

The solution could be enriched by providing a timeline for implementing the STARNET solution and detailing how STARNET will interoperate with other faster payment solutions.
Cross-border use case not met.

How will the messaging system process work?

Describe how a new message format will be utilized to interface with existing provider’s systems to move funds in and out of the STAR account.

Safety and Security

N/A

The solution appears to use a payment token – the STAR ACCOUNT number – in order to complete a transaction. This eliminates the need for other sensitive credentials, but as we have learned with debit cards, the use of a persistent token has real shortcomings. To the extent this proposal is suggesting that the STAR ACCOUNT number would be a permanent token, I would suggest revisiting that and using a dynamic tokenization solution of some sort. It appears that the solution supports high levels of authentication, as in two-factor, fingerprint, face recognition, login/password, but it's unclear whether there are requirements around authentication.

Speed (Fast)

How "fast" will the funds get to one account to the other?

Describe the movement of funds from a provider’s account to the STAR account – what is the speed of that step in the process? Describe how the provider initially receives the request to make a payment.

The solution has a strong governance approach, with public interest as the top priority, but it is unfortunate, at least from my perspective, that the solution stops short of ensuring that all stakeholder groups will be included in the governing body. Experience in other areas has shown us that advisory committees rarely have real influence over bodies with insular governance.

Legal

The solution could be enriched by describing the overall legal framework of the STARNET network and the payment rules for participating in the network. Also, the solution could be enriched by articulating how consumer transactions will be handled that exceed their prefunded balance and what types of account balance/alert notifications might be provided to the end-user.

Legal criteria are left up to existing rules and providers. This area needs to be strengthened.

I would like to see more in depth of the rules and how they will be implemented.

Rules should be described more fully.
I would have liked to see some suggested implementations for participation agreements, legal, and governance framework, particularly in light of the need to ensure that all financial institutions have equal access to a faster payments system.

**Governance**

The solution could be enriched by providing information on the STARNET governance and the overall regulatory oversight of the proposed solution.

This area is too vague and needs substance.

G.1 Effective governance & G.2 Inclusive governance – SOMEWHAT EFFECTIVE, Their proposal overall assumes the “governing body” advisory body & advisory committee of all parties and stakeholders will be created. The same approach for any legal frame work, messaging standards, with key recommendations to use blockchain GL’s and restrictions to those in the network.

I believe we need more information on this section in the proposal.

Governance should be described more fully.

I would have liked to see some suggested implementations for participation agreements, legal, and governance framework, particularly in light of the need to ensure that all financial institutions have equal access to a faster payments system.

While this was scored low by the QIAT, their reasoning was understandable, I found the path that was laid out to be exceptionally well thought out. The inclusion of end-users was very important and I was glad to see the concept behind the proposed path of governance.
Response to comments and questions from Faster Payments Task Force

Booshan Rengachari
Engineer, Founder, President & CEO - SwapsTech
booshan@swapstech.com

Legal: SwapsTech’s confidential material. To be used only by Faster Payments Task Force for the purpose of evaluating the solution.
1. Overview

STARNET is SwapsTech’s domestic and global faster payment network, covering B2B, B2P, P2B, and P2P, including support for payments at Merchant terminals, bill payments, payrolls, taxes, government payments, etc.

SwapsTech has now completed the development of the proposed solution. So, the solution is not just on a paper, or powerpoint, or by a larger institution with vested interests, but is created by Passionate and Patriotic Engineers who wanted to make a difference in the industry and give back to the society, bringing secure, faster payments to the world, making it cheaper and better.

This document explains the current status of STARNET, future plan and also addresses the questions and comments raised by the faster payment task force.

2. STARNET Status

SwapsTech is glad to share that it has completed the development of STARNET, Member Directory, and GIN (Global Instruction) Repository. The system has been tested for speed, reliability, scalability and load. It was stressed with 1 million payments per minute, with 99.9% uptime and zero loss of payment. The system can be scaled to any extend as SwapsTech uses big data technologies similar to the ones used by Facebook, LinkedIn, etc. Now, SwapsTech is in the process of connecting handful of its bank clients with its network to pilot the faster payment solution.

2.1. Payment Process

These financial institutions will continue to offer other payments (FedWire, ACH, Check, SWIFT, etc.) as usual and offer an additional payment option via “STARNET”.

As the banks and non-banks are onboarded, they will be registered in STARNET’s member directory. Each member will be connected with STARNET using VPN, and a dedicated message queue will be setup for each member. A plugin has been deployed at the bank’s network, which is integrated to its core banking system, and it can send messages to STARNET and receive responses and alerts from STARNET.

STARNET member will offer virtual/alias account (aka STAR ACCOUNT) to its clients (For example, “swapstech#ap”) which is connected to an account in the core banking system. This account will be registered by STARNET member in GIN Repository using the STARNET application that is provided to them, and these accounts are owned by the customer (similar to phone number), but can only be updated and registered by STARNET members. The customer can now share this account with customers of other STARNET
members, who can request payments from this STAR ACCOUNT or make payments to this STAR ACCOUNT, without having to share the real account numbers. If the customer changes his/her account number or change the financial institution, he/she can still use the same STAR ACCOUNT, but with a different real account number at the same or different financial institution, by simply getting it updated, without having a need to inform the vendors or parties using that STAR ACCOUNT.

The payment is initiated by simply providing the STAR ACCOUNT of the receiving party, and the STAR ACCOUNT was verified by Payer Institution using the plugin service. Payer may require second user authorize any payment going out of STAR ACCOUNT, in which case, the payment gets approved by another user at the Payer. The Payer Institution has now received the authorization of the payment, and after completing the screening of Payer and Payer, it released the payment. STARNET completed the payment from the Payer Institution to Payee Institution in a fraction of a second, and sent the confirmation to both the parties.

The only missing piece was not having the Federal Reserve Bank account, but that gap was addressed by simulating the accounts using SwapsTech’s Multi-Currency Account system.

In short, the test was a major success, and the solution is miles ahead of the other solutions, and is open, and will be owned by the industry as a whole.

2.2. Two level authorization

Two level of authorization is an important factor when it comes to payments originated from businesses, as there will be parties who will accept/capture the details of the invoice, and route it to concerned business owner for approval. However, this security feature is not required when the organization is a small business, or for P2P, or for scenarios such as payroll, transactions at a merchant. For this reason, the STAR ACCOUNT will have a flag that can be set by the owner which will require two level of authorization. When the flag is not set, the payment will be processed by the institution as soon as it is submitted without waiting for second approval.

2.3. Governance and Legal Framework

There have been a lot of feedback that the proposal lacked the governance, and participation rules and legal framework. As our nation is filled with many legal experts and lawyers, and existing payment networks has established rules, SwapsTech always thought it will be a simple and final step, which is what SwapsTech has now focused on. SwapsTech is working with legal experts to finalize the governance and participation rules.

The Governing Council will hold executive powers for the purpose of policy setting, and rule. The Federal Reserve, or the sponsoring Fed Regional Bank, will permanently chair the
Governing Council and hold certain veto powers. SwapsTech will hold a permanent membership on the Governing Council.

The remaining Governing Council members will be limited in number and term, and elected by the membership:

- Larger Bank – Two-year term; selected by other members in this category; same bank cannot serve consecutive terms.
- Mid-sized Bank – Two-year term; selected by other members in this category; same bank cannot serve consecutive terms.
- Small-sized Bank – Two-year term; selected by other members in this category; same bank cannot serve consecutive terms.
- Non-bank institutions – one member from one of the non-bank members of the network. Two-year term; selected by other members in this category; same institution cannot serve consecutive terms.
- International Bank – two members from International Banks. Two-year term; selected by other members in this category; same bank cannot serve consecutive terms.
- Merchants – two members from the business/industry lobbies. One member will represent larger Merchants, and another member will represent small businesses. [Term and eligibility to get elected in this category is still being worked out to make sure Merchants of all sizes are well represented.]
- Consumers – one member from the business/industry lobbies responsible for the public and consumers (e.g., CFPB). [Term and eligibility to get elected in this category is still being worked out to make sure the consumer’s voice and concerns are well addressed.]

A permanent, flexible, but non-voting Advisory Council will be auxiliary to the General Council and comprised of:

- Prudential regulators of payments, national security and fraud prevention.
- Prudential regulators of banks and financial institutions.
- Prudential regulators directly responsible to the public and consumers.
- Representatives from the business/industry lobbies (e.g., business chambers, industry, and small business lobbies)
- Non-banking financial professionals (Technology, CPA, Legal, etc.)

### 2.4. Fraud Screening
Fraud screening is very fragmented in the industry today, with each bank having their own screening program that can screen only against the data they have locally or is publicly available. But with STARNET, as laid out in the proposal, STARNET will offer a service to its member for possible fraudulent patterns, based on all the historical transactions from all the members in which the payer or payee is a party to the transaction. The decision making will be still at the hands of the payer institution, but this service will help enable capture the fraudulent transactions even before it gets released.

3. Taskforce Enrichment Comments, Questions and Answers

SwapsTech thanks the faster payment task force for their valuable feedback to enrich the solution. Please see the additional details as requested below.

3.1. Ubiquity

**Question:** The solution could be enriched if it provided a strategy for enrolling end-users into the STARNET network for both the banked, unbanked and under-banked. The solution could be enriched if the proposal provided how STARNET accounts are funded and the timing of when funds are made available within the STARNET account to transact.

| **Answer:** This is a good question. Enrollment of users is a very simple process. An end user can visit their bank, credit union, non-bank STARNET member, to register and receive an STARNET account. They can either use their existing account number (not recommended as these accounts may have been shared with other parties, vendors, etc.), or open a new account (only known to end user – keep it secret), and choose an ALIAS name. STARNET member will register this account with the ALIAS name in STARNET GIN Registry. Once registered, this account can be used for faster payment. Please refer section 2.1. that describes the payment process in detail.

**Question:** Not designed to meet needs of unbanked

| **Answer:** Anyone who can open an account with the regulated financial entity can transact. This entity must become a member of STARNET just like any other network.

**Question:** No front end for FIs to use

| **Answer:** STARNET has and will provide a front end for funding, inquiry, tracking, auditing, and reconciliation purpose. FIs will use their existing online portals to offer payment services to their clients.
Question: Also, debit brands and networks would be very resistant

Answer: Nothing changes in the way old networks work which are insecure, inefficient, and expensive. We are here because these debit brands are not safe and are expensive. If the user wants to continue using them, they can, but STARNET is a totally new network, faster and safer.

Question: Describe adoption plan to enable reach to all bank accounts in the US. Describe what contextual data has been outlined for the proposal that all parties will consistently utilize.

Answer: Any financial institutions that would like to participate in the network will have to install a plugin that can process ISO 20022 and STARNET messages. [Note that additional STARNET messages are required because ISO 20022 doesn’t support all the capabilities supported in STARNET; SwapsTech will work with the standards committee to get the additional capabilities included, but till then we have to support ISO 20022 and the extended messages]. This plugin must interface with their core banking platform that can inquire balance, post credit/debit. The financial institutions can use any vendor who can implement this plugin, and is simple to implement. It has taken SwapsTech about 4 weeks to create this plugin per core banking system.

Question: Currently, a few core service providers control a lot of what products small and medium financial institutions are able to provide. In order to be successful, STARNET will need to connect with many of these providers. To date, these companies have been unwilling to do this without significant compensation choosing instead to provide their own solutions. I would like to see a road map for how you will be able to work with these core providers in rolling out your solution and thus have it used by small to medium sized financial institutions.

Answer: Agree that core banking vendors may not be willing to connect, but connecting the core-banking system with the STARNET is a bank’s decision and not the vendor’s decision. Again, it takes only 4 weeks with SwapsTech’s plug and play architecture to create the plugin to core banking system, and costs less to implement, and anyone can implement it.

Question: How are non-starnet account holders identified, reached and enrolled if money was sent to them?

Answer: As you know, we can’t send an email to someone who doesn’t have an email address; neither we can call someone who doesn’t have a phone. Likewise, we won’t be able to send real-time faster payment, if the receiving party doesn’t have an account. It is very easy to create the account at any bank, credit union, or non-bank who are members of...
STARNET. And we could send the payment to anyone in the world, provided they have an account with STARNET member.

3.2. Efficiency

**Question:** The solution could be enriched by providing a timeline for implementing the STARNET solution and detailing how STARNET will interoperate with other faster payment solutions.

**Answer:** The solution is now fully developed and is in pilot. STARNET is a network connecting all banks, and all global payment networks. For global payments, a plugin deployed at the foreign bank needs to implement the same plugin, which will connect the foreign bank’s local faster payment network and is required to follow the process to confirm the credit of the money. SwapsTech’s technology is based on plug & play architecture and will follow the same plugin interface and messaging standards.

**Question:** cross border use case not met.

**Answer:** SwapsTech is #1 Foreign Exchange system provider, having licensed its system more than all other vendors combined. So, needless to say, that we are the experts in International Payments, and we have extended the same capability to all other countries, using the same plug and play components and messaging standards. Kindly read the proposal page 40 and 41 for the details of cross-border payment.

In short, the United States and STARNET will store maintain the meta-data of all global accounts in its Global Instruction (GIN) repository.

**Question:** Describe how a new message format will be utilized to interface with existing provider’s systems to move funds in and out of the STAR account.

**Answer:** We will not interface with existing provider’s network, but the banks and other financial institutions will continue to maintain those connections. We don’t want to connect with existing networks, as most of them are insecure, inefficient, slow and expensive. Please note that existing payment network requires the real account number to make/receive payment, which is not required in STARNET. STARNET account could receive incoming wires from another STARNET account, or the account owner can transfer funds from one of his other account at the bank to this account.
3.3. Safety & Security

**Question:** The solution appears to use a payment token - the STAR ACCOUNT number -- in order to complete a transaction. This eliminates the need for other sensitive credentials, but as we have learned with debit cards, the use of a persistent token has real shortcomings. To the extent this proposal is suggesting that the STAR ACCOUNT number would be a permanent token, I would suggest revisiting that and using a dynamic tokenization solution of some sort. It appears that the solution supports high levels of authentication, as in two factor, fingerprint, face recognition, login/password, but it's unclear whether there are requirements around authentication.

**Answer:** This is a great feedback. STAR ACCOUNT number is an ALIAS identifier to a real account, and the funds can’t be automatically debited without the approval by the account owner. In addition, please refer section 4.2. in this document that outlines the process in a merchant network, where STARNET will use a transaction identifier to authenticate the payment, which is approved from the smartphone (after fingerprint validation, or similar security on the phone).

3.4. Speed

**Question:** How "fast" will the funds get to one account to the other?

**Answer:** Instantaneously within a fraction of a second upon release of the payment.

**Question:** Describe the movement of funds from providers account to the STAR account – what is the speed of that step in the process. Describe how the provider initially receives the request to make a payment.

**Answer:** Please refer section 2.1. in this document that outlines the payment process and money movement, and the same is described in the proposal as well. The funds move from STAR ACCOUNT to another STAR ACCOUNT in less than second upon release of the payment.

3.5. Legal

**Question:** The solution could be enriched by describing the overall legal framework of the STARNET network and the payment rules for participating in the network. Also, the solution could be enriched by articulating how consumer transactions will be handled that
exceed their prefunded balance and what types of account balance/alert notifications might be provided to the end-user.

<table>
<thead>
<tr>
<th>Answer</th>
<th>As the solution is now fully developed, SwapsTech is now working with legal experts to draft the participation rules. As the transactions are credit push, the owner of the account can’t authorize the payment if there are not enough funds in the STAR ACCOUNT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question</td>
<td>I would like to see more in depth of the rules and how they will be implemented.</td>
</tr>
<tr>
<td>Answer</td>
<td>As the solution is now fully developed, SwapsTech is now working with legal experts to draft the participation rules.</td>
</tr>
<tr>
<td>Question</td>
<td>I would have liked to see some suggested implementations for participation agreements, legal, and governance framework, particularly in light of the need to ensure that all financial institutions have equal access to a faster payments system.</td>
</tr>
<tr>
<td>Answer</td>
<td>The days are gone where only the larger institutions with more money power controlled the industry. STARNET solution will be accessible to banks of any size, credit unions, non-banks and global banks. SwapsTech is currently working with legal experts to draft the participation rules.</td>
</tr>
</tbody>
</table>

### 3.6. Governance

<table>
<thead>
<tr>
<th>Question</th>
<th>The solution has a strong governance approach, with public interest as the top priority, but it is unfortunate, at least from my perspective, that the solution stops short of ensuring that all stakeholder groups will be included in the governing body. Experience in other areas has shown us that advisory committees rarely have real influence over bodies with insular governance.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer</td>
<td>We totally agree and it is our intention to have an inclusive governance, with the public interest in mind. We will have members from banks, non-banks, global banks, merchants, and consumers forming the governing council, headed by Federal Reserve. Please refer to section 2.3. above.</td>
</tr>
<tr>
<td>Question</td>
<td>The solution could be enriched by providing information on the STARNET governance and the overall regulatory oversight of the proposed solution.</td>
</tr>
</tbody>
</table>
**Answer:** At the time of submitting the proposal, our focus was building the solution right. Now that, we have completed the development, we are working on the logistics of participation and governance. Please refer to section 2.3. above.

**Question:** While this was scored low by the QIAT, their reasoning was understandable, I found the path that was laid out to be exceptionally well thought out. The inclusion of end users was very important and I was glad to see the concept behind the proposed path of governance.

**Answer:** The governing body will certainly include bodies representing consumers.

**Question:** I would have liked to see some suggested implementations for participation agreements, legal, and governance framework, particularly in light of the need to ensure that all financial institutions have equal access to a faster payments system.

**Answer:** This network is built to enable payment processing by banks, credit union, non-banks, and will be inclusive, and will require only small investment to join the network.

4. **Next Steps**

   With the test being successful, SwapsTech is moving to the next steps as follows –

4.1. **Governing and Participating Rules**

   As described in 2.3 above, SwapsTech is now actively working to complete the governing and participation rules.

   Each participating member will pay an annual fee and per transaction fee to cover the cost of maintaining the network. SwapsTech is willing to donate the technology to the governing council.

4.2. **STARNET Merchant Payment Network**

   The proposal covered B2B, B2P, P2B and P2P use cases. But in P2B, there are many types of payments, including bill payments to businesses, but the heavy volume of payments are processed via Merchants. Today these Merchants are paying hefty fees to the card networks, which needs to be addressed for the benefit of consumers (as they indirectly pay these fees). SwapsTech is working on a solution which will drastically reduce (if not eliminate) the fees paid by the Merchants, helping to keep the cost of the goods down. As part of this solution, SwapsTech’s Merchant solution will work as follows –

   1. Cashier completes all transactions and displays the final amount on the screen.
2. The consumer will electronically feed his/her STAR ACCOUNT via his smartphone or key in the same.

3. Merchant system feeds the transaction details to STARNET using a dedicated Merchant Network.

4. STARNET verifies the available balance, retrieves the picture of the owner of the account and sends it to the Cashier. [This picture is registered by participating network member at the time of opening the STAR ACCOUNT]. It also sends the approval request to the consumer’s smartphone, along with the transaction details.

5. Cashier verifies the picture sent by STARNET by comparing the look of the person who presented the account. [If the picture looks different, he gets referred to store manager for further verification. Further security will be added by retrieving the image of the active driving license of the account owner, so it can be compared with the presented one.]

6. The consumer receives the authorization request on his smartphone app and he authorizes the amount (for Credit Push).

7. Upon receiving verification from the Cashier and authorization from the consumer, STARNET debits the Payer via Payer Institution’s plugin, and credits the Merchant via Merchant Institution’s plugin.

8. The cashier receives the confirmation on the terminal and the consumer receives the electronic confirmation and the transaction details on his mobile phone. (There is no need to provide a paper receipt.)

This solution is extremely powerful, as the verification of payer is not effective in today’s payment world. The image of the account holder gets uploaded by participating financial institution and the same is available for Merchant to verify. Also, this system eliminates the need for paper invoices, helping the consumers in keeping track of their invoice for accounting, tracking, and returns.

4.3. STARNET Bill Payment Network

Electronic Bill Payment Network today is supported only for major merchants. Payments to small businesses are still paid by checks, and there is no standard network for larger merchants too, as there are too many players and this process is very defragmented. SwapsTech’s STARNET Bill Payment Network will enable merchants of all size sent the bills and receive the payments electronically (instantly upon approval) from the consumers.

4.4. STARNET Cross-border Payment Network
SwapsTech is primarily a global payment service enabler, which requires most complex processing than a domestic payment.

As proposed in the solution, STARNET is a network of all domestic banks, and global banks; connects and interoperates with foreign payment networks.

The current solution built by SwapsTech is built for both cross-border and domestic payments. The technology is now ready, but require foreign banks to participate. SwapsTech has now started working with the global banks to enable the same.

5. Challenge

The success of any payment network is dependent on the broader adoption. This is only possible if the network is neutral; accommodates the interest of all parties to the transaction including the banks, merchants, and consumers; not owned by one industry lobby or representative, and the transactions are cheaper. This is possible only if the Federal Reserve Bank, plays a major role as a governing body of the new payment network.

6. Conclusion

The new faster payment solution must be owned by the governing council headed by Federal Reserve Bank to maintain fair representation from every stack holder, to enable competition, and to keep the transactional costs down. If the industry and the task force fails to do so, we may end up have one institution or a body representing a segment, controlling the entire payment chain (similar to what happened to Vocalink, getting purchased by Master Card [http://newsroom.mastercard.com/press-releases/mastercard-announces-acquisition-of-vocalink/]).

STARNET offers the most compelling solution that is secure; fast; easy to adopt; requires less investment by each participating member; doesn’t require the overhaul of existing banking systems; enables fraud screening; enables cross-border payment; becomes network of all global payment networks; uses powerful big-data, hyper-scalable technology; enables competition; enables merchant payments and bill payments; eliminates the need to share real account numbers; and finally offers a solution that is owned by all stakeholders, governed by Federal Reserve Bank.
Faster Payments QIAT

FINAL ASSESSMENT

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Faster Payments QIAT

FINAL ASSESSMENT

Proposer: Swapstech

Summary Description of Solution:
The Swapstech solution is a payment network called STARNET. End-users create STAR Account IDs that are used in place of real accounts when sending and receiving payments. (An ID can be an email address, a phone number, or other registered ID.) An individual or entity registers a STAR account via the provider (which can be a bank or non-bank) and identifies the bank account into which payments should be deposited. These instructions are maintained in a central Global Instructions (GIN) repository, which is used for look-up by STARNET, the central network that connects providers. When a payment request is received for a STAR account, the central network checks with a fraud engine, credits the receiver bank’s account in the network, and informs both sender and receiver banks about the finality of payment. The solution assumes that blockchain technology may be used as a general ledger but would be kept within the network and not made public. The proposal describes the features and process flows of the solution but has not yet developed participant operating rules, legal framework, or governance arrangements.

EXECUTIVE SUMMARY OF THE PROPOSAL

■ Major strengths
  – A payer can initiate a payment with limited information by knowing the payee’s email address, phone number, or other alias and using the GIN in place of the payment account number. End-users (businesses and consumers) own the STAR account and can change their payment account at any time by updating the GIN through a provider, instead of calling vendors and other billers to update the account.
  – Both banks and non-bank providers have direct access to STARNET, and existing deposit accounts can be used to transition to STAR accounts.
  – STARNET will run a fraud check on transactions based on global and historical transaction data across the network.

■ Areas for improvement and enhancement
  – Participation requirements are needed in order to require and enforce a base level of usability and predictability in the solution for end-users.
  – The solution’s approach to settlement seems to hinge on pre-funded accounts, but the proposal would be strengthened by explaining how prefunded amounts are forecasted, what happens if a provider exceeds the prefunded amounts, if there would be risk exposure, and, if so, how that risk exposure would be mitigated.
  – The implementation plan describes an integration effort and timeline for providers to implement STARNET and prioritizes the countries it intends to connect to its global network of banks. Further detail around funding, adoption, and an approach to achieving ubiquity would be helpful. The proposal notes that there is “interest and commitment” from banks.

■ Use cases addressed
  – The solution addresses all four major use cases and includes cross-border capabilities.

■ Proposer’s overall ability to deliver proposed solution
The proposer provides an overview of the solution but is waiting for the system to be designed and accepted before engaging experts to build its operating rules, legal framework, and governance.

Swapstech has already built modules of the solution; a “handful” of U.S. banks are already using these modules. Going forward, it will be critical for Swapstech to build on the “interest and commitment from banks” it has generated to secure funding and to develop a clear value proposition for providers to transition from their existing networks to STARNET.
ASSESSMENT

Ubiquity

U.1 Accessibility

Very Effective  **Effective**  Somewhat Effective  Not Effective

**Rationale:**

The solution facilitates payments to/from all types of payment accounts in depository institutions and regulated non-bank account providers (U.1.1). It provides real-time notifications on payment status (U.1.2), and supports multicurrency payments so long as the payer’s provider has a foreign currency account in the network and the payee has a STAR account (U.1.3). As both banks and regulated non-bank providers have direct access to STARNET, the solution addresses the needs of the unbanked to send/receive payments (U.1.4). To adopt the solution, providers need to develop the plug-in to connect with STARNET. The proposer expects this effort to take 12 months to implement and test. Providers’ motivation to participate and to make the solution available to end-users is based on revenue opportunities from charging a fee for STAR accounts and transactions. The value proposition to consumers is based on the solution’s enablement of safer, more transparent, and faster payments (U.1.5).

While payments can reach all payees with a registered STAR account, it is not clear how non-STARNET payees can be reached or enrolled (U.1.2). While the proposal indicates that STARNET will establish connections to other faster payment networks in various countries (p. 6), more details on how this could work would be helpful (U.1.6).

U.2 Usability

Very Effective  **Effective**  Somewhat Effective  Not Effective

**Rationale:**

The solution supports payment initiation from an online portal, mobile phone, branch, kiosk or phone (U.2.1). It provides the ability to initiate payment using an ID that can be a phone number, email address, or other identifier (U.2.2). It can be accessed 24x7x365 (U.2.3).

Financial institutions (FIs) determine the end-user’s experience and usability. The solution recommends participation requirements to ensure that providers meet certain usability standards (U.2.4). However, no further guidelines are provided around requirements and enforcement that would ensure end-users can initiate a payment 24x7x365, have visibility into payment status, receive final availability of good funds, and have usability needs addressed.

U.3 Predictability

Very Effective  **Effective**  Somewhat Effective  Not Effective

**Rationale:**

The solution’s design ensures that its components and supporting parties deliver the defined baseline of core features (U.3.1). The solution uses standard messaging and protocols (though minimal details are provided on the message format), and baseline features are supported across channels (U.3.3-4).
The communication of baseline features of the payment experience to end-users is left up to each provider, apparently without requirements or guidelines by STARNET (U.3.2). Error resolution protections, rights, and liabilities are the responsibility of the payer’s provider if the payer initiates payment, and the responsibility of the payee’s provider if the payee initiates payment. The communication of error resolution protections, rights, and liabilities of the payer and payee is up to each provider (U.3.5).

The proposal indicates that all providers must meet the conformance testing requirements to ensure that baseline capabilities are met for each channel. However, no further guidelines are provided around requirements and enforcement to ensure a reliable, standard end-user experience for the solution’s baseline features.

**U.4 Contextual data capability**

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**Rationale**

The solution includes contextual data capabilities for payment messaging; the data may include documents, bill details, and the purpose of payment fields (U.4.1). The solution uses the ISO 20022 standard and will work with the ISO body to support new attributes, including dual authorization and billing details (U.4.3).

While the proposal indicates that data is sent and received as XML messages, further detail on ease of integration with business and personal finance systems would be helpful (U.4.2).

**U.5 Cross-border functionality**

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**Rationale:**

The solution can support cross-border payments by connecting STARNET to a bank in each country that delivers the funds. The solution outlines a phased approach that starts with the U.S. and then moves to Canada/Europe/Mexico, then to the G10 countries, followed by the Asian countries (U.5.1). The solution depends on providers to ensure advance disclosure of costs, timing, and risks with cross-border payments (U.5.3). It allows for conversion from one currency to another; the payer’s provider is required to have foreign currency accounts in STARNET for international transfers (U.5.4).

The proposal can be strengthened by describing how the solution will connect to faster payment networks in other countries (p. 6), particularly if Canada is the first wave and does not yet have a faster payment system or use ISO 20022. Also helpful would be more detail on the plan for persuading operators and providers around the world to adopt the solution, as well as specifics on payment limits, settlement cycles, and pre-funding rules (U.5.5).

**U.6 Applicability to multiple use cases**

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Rationale:
The solution supports a large number of use cases—including targeted use cases such as P2P payments—and is extensible to other use cases. The solution’s effectiveness in supporting business payments is unclear, pending more details on the solution’s messaging format and contextual data capabilities.

Efficiency

E.1 Enables competition

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Rationale:
The solution allows users to choose among providers and to switch providers by updating their account information in the GIN repository (E.1.1-2). Providers must disclose total costs in advance to customers. Any provider, regardless of size or incumbency, can provide services as long as participation requirements are met (E.1.3-4).

The solution would be improved if any entity could easily switch providers or use multiple providers by accessing their STAR account without going through their current provider. Alternatively, participation requirements could mandate the easy switching of providers (E.1.2).

E.2 Capability to enable value-added services

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Rationale:
The proposal outlines examples of value-added services and allows providers to offer value-added services regardless of size or incumbency (E.2.2). Providers must disclose to customers that value-added services are optional (E.2.3).

While the solution uses open XML messaging standards, more detail on how the solution would facilitate and enable providers to easily integrate through standard APIs (application programming interfaces), SDKs (software development kits), and/or turnkey solutions would be helpful (E.2.1).

E.3 Implementation timeline

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Rationale:
The proposal suggests that the solution can be built in less than two years, since Swapstech has already built some of the technologies and modules. Up to 50% of funding will come from Swapstech, and a consortium of banks has agreed to fund the solution once approved.

The solution outlines an implementation plan but does not discuss implementation and ubiquity hurdles, plans to overcome those hurdles, market share and growth projections, or timelines compared to historical examples (E.3.1).
E.4 Payment format standards

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**Rationale:**
The solution will use a newer version of ISO 20022, with a commitment to working with the standards body to support the new attributes (E.4.1-E.4.5)

E.5 Comprehensiveness

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**Rationale:**
The solution covers all aspects of the end-to-end payment process in partnership with providers (E.5.1). The solution’s technical design supports its features, although limited detail is provided on reliability, performance, information security protocols, operations, compliance, and risk controls (E.5.2).

E.6 Scalability and adaptability

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**Rationale:**
The proposal states that the solution is “hyper-scalable” (p. 38) and can accommodate additional volume by adding new servers. Data will be stored in unlimited “big data” systems. The proposal indicates a capacity to handle 100,000 requests per second, although it would be helpful to know whether messages could be processed in less than 17 seconds at that level or in less than one second, as indicated in other areas of the proposal (E.6.1-2). Swapstech issues a release each quarter to adapt the technical design over time (E.6.3).

E.7 Exceptions and investigations process

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**Rationale:**
The solution focuses on preventing errors upfront and provides notifications on the status of payments (E.7.1). The solution records and stores data for at least seven years (E.7.2) and includes the capability to detect fraud patterns or to aggregate exceptions data to spot patterns not visible at the individual-participant level (E.7.3)

However, the solution does not provide additional tools such as messages, alerts, and protocols to support the repair of exceptions (E.7.1), to support the ability to trace and track incidents and exceptions, or to facilitate post-transaction evaluation (E.7.2).
Safety and Security

S.1 Risk management

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**Rationale:**

Settlement risk between providers is addressed through pre-funded accounts (S.1.2). The risk of fraudulent transactions is addressed by preventative measures, such as users’ not needing to know the payee’s account number to send payments (S.1.4). Providers are liable for the risk of unauthorized transactions (S.1.5), and the solution and providers will be audited (S.1.6) to further mitigate risk.

However, the solution does not provide a risk management framework (though the proposal notes that the solution will employ the “best rules” from existing networks like SWIFT and ACH). In particular, the proposal lacks detail on how STARNET and the GIN will handle operational risks, only mentioning operational risk handled by the provider (S.1.1, S.1.3).

S.2 Payer authorization

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**Rationale:**

The solution requires the payer to authorize each payment concurrently with payment initiation (S.2.1). For pre-authorized payments, the payer can make payments based on defined parameters, and the payer can revoke the pre-authorization of payment up until it is released to STARNET. In addition, the dual authorization required for business payments is optional for pre-authorized payments.

S.3 Payment finality

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**Rationale:**

A payer’s provider must approve each payment and assure good funds. A hold is then placed on the account, and funds are taken from a credit facility or an overdraft if the account permits (S.3.1). Payment is final when STARNET debits the payer’s provider and credits the payee’s provider accounts (S.3.2). In a disputed payment, if the payer initiated the payment and the payer’s account is compromised, then the payer’s provider is responsible for reimbursing the payer within one business day; similarly, if the request came from the payee and the payee’s account was compromised, the payee’s provider is responsible for reimbursing the payer (S.3.3).

S.4 Settlement approach

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Rationale:
The proposal states that settlement between the payer’s and payee’s providers is done by STARNET for every transaction, implying a real-time settlement approach. STARNET participating banks and regulated non-banks will have accounts in STARNET. STARNET will have an account at the Federal Reserve, which will be used to receive funds for STARNET accounts (assuming the FRB approves STARNET for an account) (S.4.1). Providers pre-fund accounts from their STARNET account, presumably using existing payment systems to move money from the provider account to the STARNET account. Then payments made within STARNET are settled in real time through the STARNET ledger. This arrangement essentially manages inter-provider credit and liquidity risk, as the payer’s provider always has good funds available in the account held at STARNET (S.4.2). The proposal states that funds are settled in Central Bank money (S.4.3).

Additional detail would be helpful on how prefunded amounts are forecasted, on what happens if a provider exceeds the prefunded amounts before the next funding cycle (e.g., over the weekend), where there would be risk exposure, and, if so, how that risk exposure would be mitigated (S.4.2).

S.5 Handling disputed payments

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Rationale:
The solution’s approach to reasonably protecting business, government, and consumer payers against losses related to fraud is based on prevention of fraud and errors (S.5.4, S.5.5). In a disputed payment, if the payer initiated the payment and the payer’s account has been compromised, then the payer’s provider is responsible for reimbursing the payer within one business day; similarly, if the request came from the payee and the payee’s account was compromised, the payee’s provider is responsible for reimbursing the payer. A request can be made through STARNET for prompt voluntary return of funds from the payee (S.5.3).

More detail is needed on the requirements, process, and timeframes for addressing payments disputes, as the proposal references an investigation process (S.5.1).

S.6 Fraud information sharing -

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Rationale:
The solution sees payments across the network, runs a fraud check against a database of past transactions during processing, and uses that information to manage and monitor fraudulent patterns. STARNET is the central, authoritative, trusted repository to receive all transaction data from providers and to spot patterns that may not be visible at the individual-participant level (S.6.1, S.6.6-7). STARNET shares suspicious payments with providers (S.6.3) and provides information-sharing mechanisms that support differential access to content for providers and government agencies (S.6.5).

The proposal does not provide details regarding the fraud information that is shared between providers and STARNET (S.6.1). An explanation of how data from outside providers could be used for fraud information-sharing would also be helpful (S.6.2).
S.7 Security controls

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**Rationale:**
The solution encrypts data in transit and at rest. Network traffic goes via RMQPS connection (S.7.1).

The proposal does not address all technical access components and controls, including data quality and integrity as well as data breach prevention and detection (S.7.1). While the solution notes that data will be retained for seven years, operational and procedural components and controls are not detailed beyond a mention of the SSAE-16-certified data center (S.7.2). The managerial policies and oversight detailed by the proposal only address the responsibilities of providers, not STARNET (network and GIN) (S.7.3).

S.8 Resiliency

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**Rationale:**
The proposal indicates a capacity to handle 100,000 requests per second (S.8.1) through the use of distributed, “hyper-scalable” architecture. Approved business continuity and disaster recovery plans are in place, and the system has been tested for penetration and vulnerability (S.8.2, S.8.4-5).

The original proposal states that the blockchain ledger may be used but provides no further detail on this approach (pg 10).

S.9 End-user data protection

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**Rationale:**
Providers must protect their customers’ sensitive information. Data is encrypted in transit and at rest (S.9.1). The solution protects the sensitive information needed for account and transaction set-up by enabling payers and payees to initiate and receive payment using without knowing or sharing account numbers at any point (S.9.2-3).

S.10 End-user/provider authentication

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**Rationale:**
The solution relies on authentication by the provider using existing methods, such as two-factor authentication, across all delivery channels (S.10.1). Mechanisms to ensure that the payment reaches the intended payee include the look-up STARNET makes to the GIN to identify the payee and provider using their STAR account IDs (S.10.2).
Authentication based on risk-weighting of the transaction, a re-authentication approach, and the ability to decommission old authentication models are not addressed and are left up to the provider to provide (S.10.4-S.10.6).

S.11 Participation requirements

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Rationale:
Participation requirements are not yet defined by the solution, but the proposal indicates that the requirements will be as good as, or better than, existing requirements of the Fedwire, SWIFT, and ACH networks.

Speed (Fast)

F.1 Fast approval

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Rationale:
The solution indicates that the network processes payments in under one second, but STARNET allows providers a maximum of 30 minutes for fraud, compliance, and security checks. The solution will need to rely on operating rules to ultimately control the timing of approval.

F.2 Fast clearing

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Rationale:
The solution indicates that the network exchanges payment information in less than one second, but STARNET allows providers a maximum of 30 minutes for fraud, compliance, and security checks. The solution will ultimately need to rely on operating rules to control the timing of approval.

F.3 Fast availability of good funds to payee

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Rationale:
A payer has 30 minutes to stop any payment after authorization; after this period, in a fraction of a second, STARNET directly debits the payer’s provider’s account at STARNET and credits the payee’s provider account at STARNET.
F.4 Fast settlement among depository institutions and regulated non-bank account providers

Very Effective  Effective           Somewhat Effective    Not Effective

**Rationale**

The proposal states that settlement happens in real time per transaction through pre-funded accounts with STARNET. Thus, the settlement of funds moved into STARNET accounts is constrained to current payment systems’ operating hours and timing. However, once money is moved into the STARNET account, settlement occurs within seconds. Regarding the settlement approach, more information is needed on how prefunded amounts are forecasted, what happens if a provider exceeds the prefunded amounts, if there would be risk exposure, and, if so, how that risk exposure would be mitigated (F.4.1).

F.5 Prompt visibility of payment status

Very Effective  Effective           Somewhat Effective    Not Effective

**Rationale:**

STARNET notifies providers of payment status in real time; providers can then make that information visible to end-users. Visibility of payment status occurs within five seconds of the completion of each step.

Legal

L.1 Legal framework

Very Effective  Effective           Somewhat Effective    Not Effective

**Rationale:**

The proposal states that the legal framework will be built only after the solution’s approval and indicates that the framework will use the “best” legal guidelines from existing payment networks.

The proposal acknowledges a need for a legal framework and sets out a path to complete it, but it is not yet complete. Moreover, not enough detail is provided on the outlines of a framework. The QIAT has interpreted the Effectiveness Criteria such that solutions at this stage of development earn a rating of “Somewhat Effective.” This rating does not mean that “current legal rules have not been effective for decades.”

L.2 Payment system rules

Very Effective  Effective           Somewhat Effective    Not Effective
Rationale:
Some payment system rules are defined throughout the proposal (e.g., rules regarding payment finality, authentication). Legal responsibility for authorization from the payer lies with the payer’s provider. Error resolution is addressed in S.5.

The proposal acknowledges a need for payment system rules and sets out a path to complete them, but they are not yet complete. Moreover, not enough detail is provided on the outlines of a rules framework. The QIAT has interpreted the Effectiveness Criteria such that solutions at this stage of development earn a rating of “Somewhat Effective.” This rating does not mean that “current legal rules have not been effective for decades.”

L.3 Consumer protections

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Rationale:
If an entity initiates an unauthorized transaction, the entity’s provider is responsible for that transaction (payee or payer). However, disputes between payer and payee must be resolved outside the solution. The proposal states that the legal framework (L.3.1) and participant rules (L.3.2) are not yet developed.

The proposal acknowledges a need for consumer protections and sets out a path to develop them, but they are not yet complete. Moreover, not enough detail is provided on the outlines of a protections framework. The QIAT has interpreted the Effectiveness Criteria such that solutions at this stage of development earn a rating of “Somewhat Effective.” This rating does not mean that “current legal rules have not been effective for decades.”

L.4 Data privacy

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Rationale:
The solution relies on providers for data privacy. It does not address limitations on end-users’ or providers’ collection of data nor the use or disclosure of payment data to third parties (L.4.1). The proposal describes a data security approach through encryption in transit and at rest, but it does not describe operational procedures and policies to secure data at end-user and provider locations, nor at STARNET and in particular the GIN (L.4.2). Providers are responsible for the nature and type of end-user data required, for providing end-users with visibility into the data collected on them, and for developing an approach to data breaches (L.4.3-4).

The proposal acknowledges a need for data privacy and sets out a path to develop an approach, the approach is not yet complete, and not enough detail has been provided on the outlines of a framework. The QIAT has interpreted the Effectiveness Criteria such that solutions at this stage of development earn a rating of “Somewhat Effective.” This rating does not mean that “current legal rules have not been effective for decades.”

L.5 Intellectual property

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Rationale:
The proposal states that no third-party intellectual property is included in the solution, but that the proposer will do the work to ensure that intellectual property rights are not breached after the solution is approved.

Governance

G.1 Effective governance

| Very Effective | Effective | Somewhat Effective | Not Effective |

Rationale:
The proposal assumes that a governing body and advisory body consisting of all parties and stakeholders will be created, and that the governance sub-criteria will thus be met. The proposal acknowledges a need for effective governance and sets out a path to develop a governance model, but the model is not yet complete. The QIAT has interpreted the Effectiveness Criteria such that solutions at this stage of development earn a rating of “Somewhat Effective.” This rating does not mean that “current governing rules have not been effective for decades.”

G.2 Inclusive governance

| Very Effective | Effective | Somewhat Effective | Not Effective |

Rationale:
The proposal assumes that a governing body and advisory body consisting of all parties and stakeholders will be created, and that the governance sub-criteria will thus be met. The proposal acknowledges a need for effective governance and sets out a path to develop a governance model, but the model is not yet complete. The QIAT has interpreted the Effectiveness Criteria such that solutions at this stage of development earn a rating of “Somewhat Effective.” This rating does not mean that “current governing rules have not been effective for decades.”