REQUEST FOR INFORMATION ON PAYMENTS SYSTEM VISION 2030

PAYMENTS SYSTEM MANAGEMENT DEPARTMENT

CENTRAL BANK OF NIGERIA
Central Business District
P.M.B. 0187,
Garki, Abuja.
+234 (0) 946238346

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To: ALL Deposit Money Banks, Other Financial Institutions and Payment Service Providers

REQUEST FOR INFORMATION ON THE PROPOSED PAYMENTS SYSTEM VISION 2030 INITIATIVE

The Central Bank of Nigeria is in the process of developing the Payment System Vision 2030 strategy document *(Release 3);* which will define the strategic agenda for the Nigerian Payments System for the next ten years.

In view of the above, you are kindly requested to review and respond to all or part of the questions and topics outlined in Sections 6, 7,8,9,10,11 and 12 of the 'Request for Information on PSV2030' *(copy attached)*. To provide a submission, please respond by writing to the attention of the Director, Payments System Management Department, Central Bank of Nigeria, Abuja or email: TOLADIMEJI@cbn.gov.ng and UUAKAH@cbn.gov.ng on or before **7th June 2019**.

Kindly provide contact details that will be used for any follow-up, should the need arise.

Please accept the assurances of my highest regards.

Yours sincerely,

'Sam C. Okojere
Director, Payments System Management Department

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1 Summary

Since 2006, CBN has published two strategy roadmaps, Payments System Vision (PSV2020), that have created a robust and well-utilised payments environment. The payments industry is currently experiencing radical change internationally and in many countries domestically. Innovation and competition are being driven by deployment and adoption of new technology solutions and encouragement for new entrants through new regulatory regimes.

The two previous releases of PSV2020 have largely achieved their objectives. Now is the time to create a new agenda for the payments system in Nigeria – Payments System Vision 2030 - one that defines a framework for the next ten years.

Given the current rapid pace of change, we are seeking the views of a wide range of industry stakeholders and experts. Our PSV2030 framework must recognise the swiftly evolving user requirements, technical solutions, regulatory environments and external threats that typify the industry.

The creation of PSV2030 comprises three main phases:

- **Phase 1 – Scope and Consult** – during this current phase, we have produced this scope document and are currently seeking input from current and potential stakeholders, both nationally and from other countries
- **Phase 2 - Design and Plan** – the information received from Phase 1 will be used to develop the Payments Framework that will recognise the approaches being adopted in other countries but will be appropriate for the local market in Nigeria.
- **Phase 3 – Deploy** – likely to be a sequential implementation over many years and is adaptable within the defined framework to respond to changes in technology and platforms. The framework should look to introduce a new architecture where appropriate and seek to retire legacy environments when no longer relevant.

The objective is to complete a consultative draft of PSV2030 in time for an International Payments Conference in early September 2019, followed by request for further comments. The final version of PSV2030 is planned for release by end 2019.

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2 Scope of the Invitation to Submit Information

This document has been created to support Phase 1 of the PSV2030 Payments System strategic review and is intended to solicit views and insights from a wide group of stakeholders.

CBN is the regulator of all payment infrastructure in Nigeria, and so will be the ultimate decision maker and approval body for the strategy. But the strategy seeks to support the payments industry and end users, hence the collaborative approach to developing the strategy.

2.1 Responding to this Invitation to Submit Information

The document considers many dimensions of an efficient and effective payments system. You are invited to respond to all or part of the questions and topics outlined. The questions are intended to provide a framework for consistent responses. However, the questions are not prescriptive - you may add other comments related to the topic.

You can offer views on related topics that are not covered in the specific topics covered (see Section 12 - Any other considerations on page 28).

Please reference the sections from this document in your responses.

If you wish to provide a submission, please respond in writing by 24th May 2019, sending your response

In writing to Director, Payments System Management Department, Central Bank of Nigeria and/or email to TOLADIMEJI@cbn.gov.ng with copy to UUAKAH@cbn.gov.ng

Please provide contact details that will be used for any follow-up should we require further discussion on any points raised in your submission

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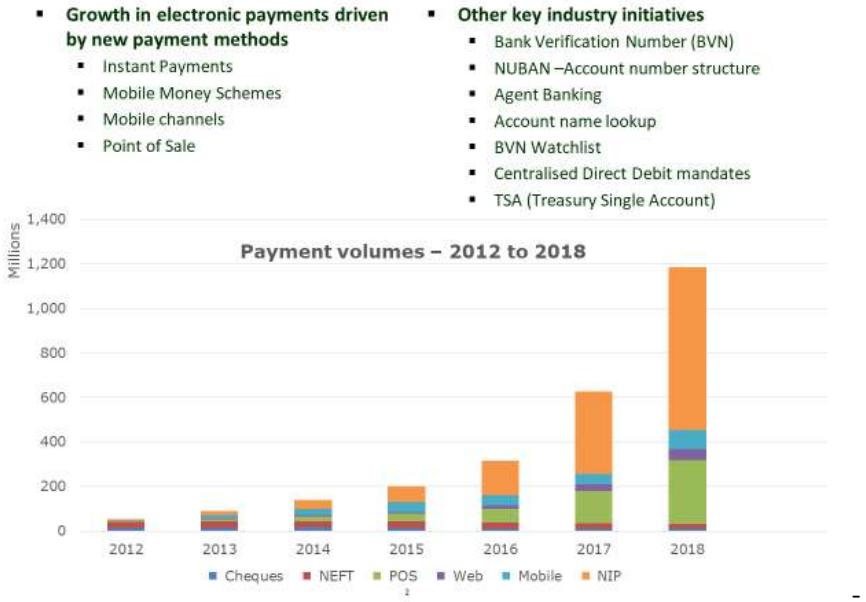
CBN reserves rights to use or exclude any content submitted in the final PSV2030 document and to use for any other reasonable purpose.

3 Background

3.1 Progress to date

The first version of the Payments System Vision was launched in September 2006 with the overall objective of creating a payments environment that was 'Internationally Recognised, Nationally Utilised". A second version was released in August 2013, to build on the significant accomplishments, and define new priorities for the Nigerian Payments Market.

Nationally utilised - The progress over the last decade has been impressive. New payment methods have been introduced and the vast majority of the impressive growth rate has been from these new payments. Significant new functionality such as a biometric-based Bank Verification Number (BVN) and a harmonised bank account structure (NUBAN) have improved the level of fraud detection and automation of payment processing.



Internationally recognised – the industry (CBN and participants) have made significant strides in creating a payments systems that is significantly more resilient and meets satisfactory levels of conformance to internationally accepted standards

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- **The Nigeria payments landscape has fundamentally changed in the last decade**
- **Our approach : A balance of the guiding hand of the Central Bank of Nigeria plus the energy and innovation of the industry participants**

Process + Engagement = Progress

With 2020 rapidly approaching, our strategy must be reviewed to ensure it is relevant for the current and future market.

We have undertaken three separate assessments against the benchmark for a payments system, namely the Principles for Financial Market Infrastructure (PFMI) defined by the Bank for International Settlements (BIS). The assessments have shown a continued improvement in the overall resilience in the current market with significant improvements in the governance structure, clarity of rules and regulation and reduction in the level of risk.

The local market is now at the stage where we can reasonably state that we are ready to move to a new phase of the infrastructure.

4 Scope of the PSV2030 review

Our focus is on creating the appropriate environment for a relevant, innovative and resilient payments architecture. As such, the scope of this review covers not just the technical architecture, but also the regulatory regime, financial and operational risk, and ensuring compliance with payments system best-practice as defined by the Bank for International Settlements (BIS) Principles for Financial Market Infrastructure (PFMI).

4.1 Guiding Principles

The previous two versions of the Payment Vision 2020 were developed with clear guidelines to ensure the Nigeria Payments System will be nationally utilised and internationally recognised.

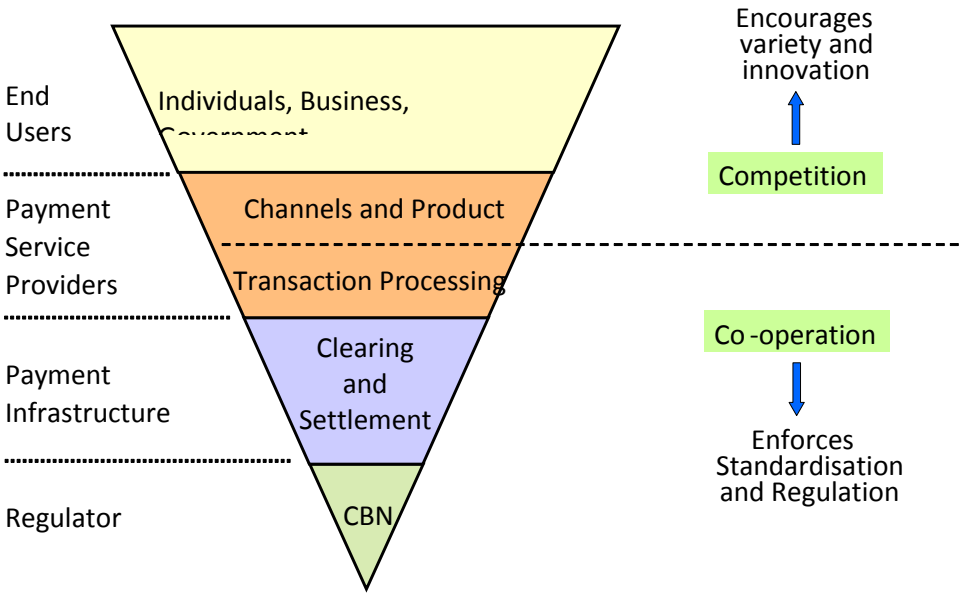
- Built to serve the end-user via the Payment Service Providers
- Facilitating nationally accepted payment methods
- Encouraging innovation and deployment by service providers
- Using common core infrastructure and enforcing interoperability
- Recognising local geographic, market and cultural practices
- Conforming to internationally accepted risk principles
- Within a clear and transparent legal and regulatory framework
- With Specific, Measurable, Attainable, Relevant and Time-bound goals

These guiding principles are equally valid for the PSV2030 Framework. Given the advances made in the domestic market, we are adding the following two guidelines for PSV2030, namely:

- Further leveraging the local technical and business skillset
- Seeking to create solutions that are transferable to other relevant markets

4.2 Common Core Infrastructure

The guideline on common core infrastructure and interoperability has been a consistent principle from the initial PSV2020 review. The following diagram represents our current position on co-operate versus compete.



4.3 Global Trends

The payments industry has evolved over the past few decades from the early days of electronic payment. The pace of change has increased dramatically over the last few years, with the change driven by rapid advances in technology, customer expectations and new business models (including Fintech)

We can valuably learn from the global trends and new practices in payments deployed in other countries, but must make our strategy relevant for the Nigerian market, domestically and where Nigeria plays a role in international flows (regionally and globally)

Advances in technology and changing regulatory focus has created some fundamental shifts in the payments landscape in the last few years. The main trends and drivers are listed below, and covered more fully in Section 6 - Global Trends

- New payment methods
- Open Banking
- Digital Access
- Distributed Ledger Technology
- Big data and Artificial Intelligence
- Cyber-Security
- Digital Identity
- Machine Learning and Robotics Process Automation

4.4 Scope of the review - Phase 1

Phase 1 of the PSV2030 review is, by definition, broad. The intention is to seek the views of industry experts to ensure that our framework is comprehensive and imaginative. We do not want submissions form stakeholders to be constrained by the current systems and thought processes.

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Subsequent phases will distil the ideas generated from Phase 1 into a framework that captures the good ideas and suggestions, but builds an implementation roadmap that is practical and achievable within the medium timeframe.

5 Proposed Approach to PSV2030

Given the pace of change of the technology, user expectation and business models, no one individual or entity has a monopoly of good ideas. Our proposed approach is to create three distinct phases for the PSV2030. Firstly, to collate the views and ideas of all potential stakeholders. Secondly, to define an overall framework for the new payments architecture. And finally, to embark on the deployment.

The initiative will be driven and sponsored by the Payments System Management Department (PSMD) of CBN, with industry oversight via the PICC. CBN oversight will be via Committee of Governors (CoG).

5.1 Phase 1 – Scope and Consult

For the first phase, we will engage with potential stakeholders by circulating a summary of the broad objective and guiding principles for the new payment architecture and seeking for submissions. The objectives and guiding principles will be very broad, covering not just the technical architecture, but also the operating parameters, regulatory framework and participation guidelines. Operational, financial and cyber-security resilience will be of paramount importance as the payments market becomes increasingly electronic and immediate.

5.2 Phase 2 – Design and Plan

The second phase will synthesise the contributions into a strawman payments architecture, but one that is more specific and definitive than the broad objectives from Phase 1. The proposed structure, covering all parameters outlined in the scope, will be widely circulated for further review and discussion with stakeholders. It is anticipated that the initial discussion document will be launched at the proposed International Payments Conference, planned for 3rd - 4th September 2019.

The final document, modified based on feedback following the initial version, will formalise the new payments architecture and deployment roadmap.

5.3 Phase 3 – Deployment

The final phase, deployment, will only become clear during Phase 2, but it is likely that any new architecture will be implemented gradually, and alongside any legacy infrastructure that has to be retired. If the framework has been well defined, deployment will continue to evolve as new capabilities and business model emerge – one of the guiding principles is that the framework must be future-proof.

5.4 Top level milestones for Phase 1 and 2

Given the consultative approach of this initiative, the project has defined two key points at which external input will be requested – firstly during Phase 1 following the publication of the broad objective and scope, and secondly after the release of the draft PSV2030.

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The key milestones are provisionally defined as follows

Phase 1 – Scope and Consult	Issue draft Invitation to Submit Information to PICC	15 April 2019
	Update to PICC at meeting	25 April 2019
	Finalise ISI based on PICC feedback and circulate	02 May 2019
	Create framework for PSV2030 document	24 May 2019
	Receive initial feedback from ISI submissions	7 June 2019
Phase 2 – Design and Plan	Produce initial draft PSV2030 for PICC review	14 June 2019
	Receive PICC feedback	21 June 2019
	Produce working draft for PICC review	5 July 2019
	Walkthrough at PICC meeting	11 July 2019
	Fine tune for initial release – for consultation	9 August 2019
	Launch at International Payments Conference	3 Sept 2019
	Release for sensitisation and further comments	3 Sept 2019
	Receive comments	4 Oct 2019
	Develop Roadmap and Timeline	31 Oct 2019
	Review final draft at PICC meeting	14 Nov 2019
	Formal release of PSV2030	6 Dec 2019
Phase 3 - Deployment	To be determined	

6 Global Trends

The first part of this analysis focusses on the implications of the global trends identified in Section 4.3 - Global Trends.

6.1 New Payment Methods

Instant payments has created a fundamental shift in adoption of electronic payments in many countries. Nigeria, as an early adopter of this payment method, has experienced strong growth in this area. Other emerging payments types, such as Request for Payment, are likely to see equally strong adoption. Mobile payment schemes and mobile phones as a channel to banking services both continue to gain traction, particularly in Sub-Sahara Africa. Any new architecture must be able to support new payment methods without a significant restructuring.

It is expected that physical cash will continue to decline, and in many countries the use of technologies such as contactless card payments, NFC (near field communication) on mobile devices and low-cost card acquiring solutions has made cash virtually redundant.

6.1.1 Questions to consider

- *What payment methods not currently supported in Nigeria should be included in the framework?*
- *What future payment methods could you envisage that would help drive a vibrant economy?*
- *Which sector will be the primary driver of new payment methods – retail, business or government flows?*
- *There is a drive to reduce the usage of cash transactions. Is a truly cashless society achievable and/or desirable within the timeframe of this strategy (2030)? What payment methods will be most relevant in displacing cash? What are some of social implications of discouraging the use of cash?*

6.2 Open Banking

Most countries with mature banking infrastructure are opening access to new entrants and challenger banks to encourage innovation and competition. In Europe, PSD/2 has created different levels of service provision, from pure payment initiation and balance reporting (but not account holding) through to full-service account and credit provision. Such structures must support new entrants whilst not undermining the resilience of banking and payment services.

6.2.1 Questions to consider

- *Is the current market ready to support a market for more open banking and payment service providers? If not, over what time period will this be appropriate (If ever)?*
- *Where are the greatest risks in creating an open banking environment?*

- *What regulatory changes would you recommend to support open banking? Do you see any models from other countries that would be most applicable for the local market in Nigeria?*
- *What steps would you recommend to simplify the adoption of open banking (for example, requirement for banks to support open APIs)?*

6.3 Digital Access

Accessing banking services through digital channels will become the norm for all payment solutions, be it through mobile devices for retail banking, or more sophisticated electronic channels for businesses. The pace of adoption varies by region, with solutions in sub-Sahara Africa requiring the use of older technologies such as USSD codes that are available alongside smart phone solutions that dominate in most G20 markets. In Nigeria, deployment of USSD mobile solutions has made access to electronic payments and other banking services more broadly available.

Digital exclusion is a growing challenge in all markets, recognising that lack of access to digital solution can inhibit social mobility, mitigated in part using agent services to facilitate access for sections of the community that lack the knowledge or devices to access digital services.

6.3.1 Questions to consider

- *What are the major current barriers that restrict digital access?*
- *What solutions could be deployed to minimise the lack of access to digital services (for example, making solutions simple to use, public awareness programs, the use of agent banking and other community services)?*
- *Should improved digital access be focussed on the current banked, the current under-banked, or the current unbanked community?*
- *Which would be most suitable for a solution that helps to increase digital inclusion?*

6.4 Distributed Ledger (DLT) for fiat currency

Blockchain has been a mainstream topic of discussion, and rarely has a technology attracted as much media attention and investment funding. A more generalised description of Blockchain is Distributed Ledger Technology (DLT) which capture the essence of the design – allowing verifiable records of ownership to be distributed rather than relying on a single central ledger.

Some countries and major banks are piloting schemes where digital currencies are tied to a fiat currency, which has the potential to streamline payment processing, introducing greater security and traceability, and providing a platform for innovative business processes using smart contracts.

Distributed Ledger is potentially a powerful disruptive technology and enabler of new solutions and business processes. However, its applicability as simply a direct replacement for the existing payment processes is not clear, given the potential processing cost and complexity. PSV2030 will develop an informed position on DLT as a solution for Naira payments.

6.4.1 Questions to consider

- *Should Nigeria implement a DLT-based payments infrastructure to support Naira flows? If so, what do you see as the primary benefits for such a solution?*
- *Over what timeframe will the technology become sufficiently mature to support a DLT-based Naira payments solution (if at all)?*
- *There are many different approaches for implementing a DLT payments network (Permissioned versus permissionless, private versus public) and approach for consensus management (such as proof-of-work versus proof-of-stake). Which approach would be most appropriate for a fiat currency?*
- *Do you have any technical concerns about such a deployment? Consider such aspects as capacity constraints, processing time and costs, security and control.*
- *Peer-to-peer transfer of value offers the potential for anonymity. Full anonymity is highly unlikely to be acceptable to any central bank given the need for KYC and AML. How do you propose that any implementation balances the need for operational efficiency and the need for control and visibility?*

6.5 Distributed Ledger (DLT) for Initial Coin Offerings

Initial Coin Offerings, such as Bitcoin, have dominated the implementation of DLT-based crypto-currencies. These have remained largely unregulated by national regulators, and most industry observers note that crypto-currencies have evolved to become an asset class rather than payment mechanism.

6.5.1 Questions to consider

- *Is there a role for ICOs in mainstream payments?*
- *If so, what would be the potential use cases and benefits of solutions based on crypto-currencies?*
- *Should crypto-currencies, and the exchanges that trade crypto-currencies, remain unregulated or loosely regulated?*

6.6 Distributed Ledger Technology and Smart Contracts

As with many exciting new opportunities, Distributed Ledger Technology has a mix of hype and reality. The hype of specific implementations such as Bitcoin should not detract from the potential of DLT to radically transform the current solutions for transferring ownership of assets, physical and virtual.

An area of great potential is that of smart contracts, where for example, the transfer of funds can be dependent on specific condition, for example the transfer of ownership of financial securities or completion of a commercial trade.

Linking settlement to transfer of ownership through Smart Contracts appears to offer tangible potential benefits. PSV2030 will explore potential solutions for Smart Contracts, and how the technology would be linked to the payment processing.

6.6.1 Questions to consider

- *Do you agree that Smart Contracts is a primary driver for supporting a DLT-based fiat currency?*

- *Is a DLT-based payment infrastructure required or desirable to support a true Smart Contract solution?*
- *Which applications for Smart Contracts do you foresee as offering the greatest potential benefit in the short/medium term (if any)?*
- *Should potential Smart Contract solutions be developed at a national co-operative level, or be left to commercial organisations to develop and deploy in a competitive environment?*
- *Should a solution focus on a national implementation, or support a cross-country deployment?*

6.7 Big Data

The ability to analyse massive datasets can provide deep insights, and the data contained in payment flows is information rich. Analysis of economic activity, fraud detection and anti-money laundering, speedy detection of operational issues and real-time risk management are some of the early applications being deployed.

The ability to analyse payment flows offers significant opportunities in many areas of economic analysis, operational controls, risk management and fraud prevention. PSV2030 will identify potential uses of the available dataset, which in turn may define specific data that would be valuable to collect as part of the payment flow.

An open question, and current challenge, is how to collate data for 'on-us' transactions. If a single bank maintains the debit and credit account for a payment, it is operationally simpler and cheaper to process as a book transfer across the accounts of that bank, rather than pass through the clearing system. However, this removes the visibility of these flows from the central data repository.

There could be great potential for creating economic and social value from the data being transferred through the payments system. However, due regard must be given to the resulting privacy and data protection implications of access to such a powerful dataset. With the potential introduction of NDPR (Nigeria Data Protection Regulation) and the amendments to the NITDA Act that are currently with the Assembly, data privacy will be under ever increasing scrutiny.

6.7.1 Questions to consider

- *Is capturing and analysing data for all payment flows achievable and desirable?*
- *What do you suggest as the primary and /or most valuable applications for Big Data based on the payment flows?*
- *Should all flows, including 'on-us' transactions, be required to flow through the common infrastructure to ensure that all data is captured for subsequent analysis? Are there specific flows that you would include/exclude from the data capture?*
- *What are your primary concerns about data privacy and data protection? What restrictions would you impose on any Big Data solutions?*
- *Do you believe potential data privacy regulations and/or laws will impact the ability to offer big data solutions on payment flows? Should the government/CBN be exempt from any stringent data collection and analysis?*

6.8 Cyber-Security

Cyber-security has been cited as one of the greatest economic and social risks, and most countries rate the threat of cyber-attacks from hostile nations and organised crime as high as physical attacks. Potential attacks are wide-ranging from those using technology tools to gain unauthorised access into systems, denial-of-service attacks, through to those based on social engineering that exploit human weaknesses.

Creating secure and robust infrastructure has become a critical requirement. The payments architecture must be built to the highest data security standards, covering not just the technical and telecommunications threats to the core infrastructure, but tools that identify and block potential attacks that originate outside the core infrastructure.

As processes and data become more real-time, the risks increase since there is less time to respond to potential breaches. But conversely, with Big Data and electronic flows, it may be possible to shift form fraud detection to fraud prediction.

6.8.1 Questions to consider

- *The need for appropriate cyber-security is a given. What are the cyber threats that you consider require greatest focus, and/or are most difficult to protect against?*
- *What do you believe are the most appropriate access control tools (something I know, something I have, something I am …)? Should minimum standards, such as two-factor authentication, be mandated for all banks and service providers?*
- *Should a high standard for fraud detection be built into the core payments infrastructure, or should the responsibility be left to individual banks and payment processors?*
- *Do you believe fraud prediction is possible and/or desirable as a potential tool in reducing fraudulent transactions? If so, do you have any specific views on how this might be deployed within the payments architecture?*
- *The move in many countries is for consumers to be protected from the result of fraudulent activity with the banks and service providers covering the cost of such fraud (except in cases where the consumer is proven to be negligent). Where do you see the boundary of responsibility between service provider and end- user (consumer and business)?*

6.9 Digital Identify

Reliably identifying individuals, in the physical and virtual worlds, is a core component of data security. Nigeria has a world-class solution with BVN (Bank Verification Number) – a unique identifier required for any individual that has a bank account and verified by biometrics to ensure that any individual can only have one BVN.

BVN will continue to form the foundation of digital identify in any new payments architecture, but it may be possible to use different biometric approaches and/or additional elements to further improve resilience

- *Do you consider the current BVN solution to be appropriate for the future payments infrastructure?*
- *If not, how would you suggest improving digital identity?*

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- *Could BVN validation be used more widely in the payments system, and if so, what applications would you see as valid uses of BVN?*
- *Are you aware of any solutions or concepts that would reduce the effectiveness of BVN biometrics as a unique identifier?*
- *Do you have any view on how BVN should be deployed alongside other national ID schemes such as that supported by NIMC?*
- *Legal Identity Identifiers (LEIs) are being globally deployed as a unique ID for business entities that undertake trading of financial instruments. Should the infrastructure recognise and/or adopt LEIs for domestic business flows?*

7 Operational Considerations

7.1 Common Core Platform

Clearly the new architecture must support all appropriate payment instruments, covering those currently in use (unless scheduled for retirement, and excluding physical cash) and new payment methods as and when required.

A key design criterion is to achieve an infrastructure that is not constrained by volume or value of payments. High-volume retail payments versus high-value financial flows clearly have a different profile and risk implications. Historically, separate infrastructure has been implemented to support these different flows. But with advances in processing power and telecommunications bandwidth, is this distinction still relevant?

PSV2030 will consider the pros and cons of creating a common core infrastructure for all payment flows regardless of volume and value. A single infrastructure offers clear benefits around collateral and risk management and consolidation of information and control but increases the risks of single point of failure.

The cards infrastructure requires specific decisions due to the inter-dependence on the international card schemes (MasterCard, Visa, UniPay …) and the adoption of formats and processing rules specific to the card industry.

7.1.1 Questions to consider

- *Do you consider that one common platform is achievable and/or desirable?*
- *If a common platform is desirable, are certain payment methods precluded?*
- *Should retail payments (typically lower value and higher volume) and financial flows (typically high value and lower value) be processed on different platforms.*
- *What operational, risk and other aspects are important when considering the option of a single common platform?*

7.2 Differing levels of functionality

Should a common infrastructure for all payment flows be appropriate, consideration must be given to the potential need for different levels of functionality. Not all payment methods will require all available features. For example, advising the payer that the beneficiary account has been credited, or payment tracking, could be value-add features that are optional (and potentially chargeable). Any new architecture should allow end users (potentially through their service provider) to select such optional features, at a default choice or for specific payments as required.

7.2.1 Questions to consider

- *Do you agree with the proposed approach of optional features that are separately priced?*
- *Should 'value-add' feature/functionality be created in the common core infrastructure, or offered by the service providers as a point of competition? Where should the boundary between compete and co-operate be drawn?*

- *Do have views and/or suggestions about how variable functionality should be offered (for example, pre-defined service offerings, features selectable at the point of payment initiation …)*
- *How should the charges for optional feature be collected (for example, deducted at the point of initiation, billed in arrears, ….)*

7.3 Operating hours

The new architecture should be available 24 x 7 for payment initiation and payment processing. The implication on the potential need for 'out-of-hours' funding of settlement positions and resulting impact on bank treasury and other bank operations must be considered. (

Note: in our recent review of Collateral Management, one sub-group conducted some excellent research on settlement positions and payment values/volumes at different times of day and different days of the week based on the current 24 x 7 availability of car, mobile and NIP payments. The conclusion was that, with some relatively minor revisions to the current settlement cycles, out-of-hours and weekend settlement was not currently required.

7.3.1 Questions to consider

- *Do you agree that the new architecture should be designed to support 24 x 7 processing? And should this include weekend payment processing?*
- *Do you agree that extended settlement windows and/or weekend settlement should be introduced if such changes provide significant benefit in reducing liquidity and credit risk for settlement?*
- *If extended settlement cycles are required, what will be the impact on stakeholders (payment processing, risk and fraud management, operations, funding and settlement, bank processing and client facing systems*

7.4 Real-time position management

The current collateral management review highlighted the significant risk advantages of real-time position managements, specifically for eliminating liquidity and credit risk for settlement positions (although it does introduce other operational issues around bank liquidity management and pre-funding that require careful consideration). Real-time position management should be a basic design requirement of the new architecture.

7.4.1 Questions to consider

- *Do you agree that real-time position management should be a basic design feature of any new payments infrastructure?*
- *The approach for handling real-time position management would be agreed during the designs and specification of any new architecture. Do you have strong views or suggestions on how the position management should be implemented across the different payment methods, recognising that the approach may vary for high-value financial payments versus low-value retail payments?*
- *What are the primary drawbacks, if any, or real-time position management (for example, outgoing payments being blocked if a payment provider reaches a pre-funded limit, …)?*

7.5 Payment Tracking

The banking industry should look to emulate functionality that exists in other industries. For example, when comparing traditional texting with applications such as WhatsApp, one key differentiator is that of message status – in WhatsApp the sender knows when the other party has received the message, the last time the receiver was online, and when the message has been read. A similar payment tracking could revolutionise the confidence in payment processing. Other features, such as location tracking, could support greater fraud protection.

7.5.1 Questions to consider

- *Do you agree that payment tracking should be a core feature designed into the new payments architecture?*
- *If so, should this feature be a standard offering, or a value-add offering?*
- *What are the significant status updates that should be reported and made available?*

7.6 Data standards

The new architecture should be built on the latest internationally accepted data standards, ISO20022 for payments and reporting, and ISO8583 for card transactions.

7.6.1 Questions to consider

- *Do you agree that ISO20022 should be the data standards to be used for any financial messaging?*
- *Should the architecture support other legacy standards in parallel (for example via a data mapping service)?*
- *Do you foresee any emerging data standards that should be supported in the medium term?*

7.7 Technology Platform

At this stage, no decisions are expected on specifics of the technology platform that will support any new payments architecture. However, it would be useful to receive feedback on some guiding principles for the technology platform and architecture.

7.7.1 Questions to consider

- *Do you suggest any specific guiding principles to the network and systems architecture (for example, distributed cloud-based solutions, use of multiple network providers ….)?*
- *Are there any specific approaches that you recommend we specifically exclude from any architecture design?*
- *Do you foresee any new technology (for service providers or end users) that may have a significant impact on any new payments architecture?*
- *Do you believe that our new platform has to assume that some current technology will **not** be widely available in the local market (for example, smartphones and access to internet-based services)? If so, what are potential implications for our design and deployment?*

7.8 APIs versus message-based solutions

Traditionally, the payment systems have been based on message-based and/or file-based communications between the service providers. Increasingly, the use of APIs is being encouraged to create more flexible and interactive sessions between service providers.

7.8.1 Questions to consider

- *Do you foresee a shift to interactive API-based sessions between service providers?*
- *Do you have insights or preferences on the approach to be adopted, and which feature should be API-based rather than message or file-based?*

7.9 Operational Control

The new architecture should support a real-time operational dashboard, which could include information such as status of participating institutions, security and fraud alerts, volumes and values of flows by payment instrument, current net settlement positions, usage of intra-day collateral and other pledged assets and transaction processing times.

Periodic management reports should also be available, including trend analysis.

7.9.1 Questions to consider

- *Do you agree that a real-time operational dashboard should be a basic design criterion for any new payments architecture?*
- *Should the dashboard be made available to all service providers/banks, or purely for the entity running the infrastructure (and regulator)?*
- *Are any critical categories of operational control metrics missing from the above list?*

7.10 Quality of Service

Assessments of service quality, at all levels of the payments system from core infrastructure through commercial solutions, has typically been either subjective and/or through periodic assessments. There have been some notable advances, such as the real-time tracking of payment volumes and values of certain payment methods through the NIBSS Industry Statistics portal (https://nibss-plc.com.ng/report/). The new framework provides an opportunity to embed quality of service indicators into the architecture – potentially both objective measures (such as transaction processing times, failure rates, service provider up-time) and subjective (based on user experience).

7.10.1 Questions to consider

- *Do you agree that quality of service metrics should be an integral part of any new payments system framework?*
- *Which areas of service quality are most important to track and report?*
- *Should be indicators be both objective (as outlined above) and subjective (which allows for users to assess their experience of the service quality)?*
- *Should the service provider information be widely available, or should the publicly available data be restricted to industry level data?*

7.11 Consumer Protection

Creating consumer confidence is of paramount importance, particularly when offering services to first-time users. The new architecture should aim to make payments 'error-free', but it is inevitable that issues will occur. The new framework must provide robust consumer protection – a wide ranging scope from consumer awareness, appropriate guidelines and regulations, provision of accurate data to support problem resolution, and operational process to handle initial enquiries through to potential escalation and arbitration.

7.11.1 Questions to consider

- *Do you believe that the current consumer protection structure and service is appropriate and works effectively?*
- *What are the primary current challenges in providing an effective consumer protection process?*
- *What recommendation would you have for improving the current consumer protection arrangement?*
- *The move in many countries is for consumers to be protected from the result of fraudulent activity with the banks and service providers covering the cost of such fraud (except in cases where the consumer is proven to be negligent). Where do you see the boundary of responsibility between service provider and end- user (consumer and business)?*

7.12 Disaster recovery and contingency

As with cyber-security, the need for rigorous disaster recovery capability is a given. However, it would be useful to receive feedback on some guiding principles for the approach to disaster recovery and contingency.

7.12.1 Questions to consider

- *Do you suggest any specific guiding principles to the disaster recovery architecture?*
- *Are there any specific approaches that you recommend we specifically exclude from any disaster recovery design?*

7.13 Domestic and International flows

The focus for the PSV2030 review is domestic flows, since these are under the direct regulatory oversight of CBN. However, the strategy must consider how any new architecture could integrate with potential regional payment schemes, and more broadly how to link to international payments, either directly or via the traditional correspondent banking model.

7.13.1 Questions to consider

- *Are there any specific initiatives for international or regional payments that we should consider as essential to include in the scope our proposed architecture (for example, inter-operability with regional payment systems, …)*

8 Operating Parameters

The first phase of developing the PSV2030 is, by design, broad in scope with no pre-determined solutions. However, certain operating parameters ae given to provide direction to the respondents

8.1 Support Financial Inclusion

The two previous versions of the PSV2020 strategy have been very effective at improving the resilience of the payments infrastructure and increasing the level of banking solutions. Some of these, such as mobile payments and the Agriculture initiative, are extending the availability of core banking services to the under-banked and unbanked. PSV2030 must accelerate the availability of basic banking and financial services to the unbanked. Ideas are sought on how to achieve this acceleration, be it through innovative new solutions, regulation or centrally funded initiative.

Financial inclusion remains a key priority to achieve a payments environment that is truly 'nationally utilised'.

8.1.1 Questions to consider

- *Do you agree that financial inclusion should be a key objective of PSV2030?*
- *What are the major design criteria that we should consider in supporting financial inclusion?*
- *Do you agree that Agent Banking is one of the key drivers for improving financial inclusion? If so, how should the new architecture better support the agent banking model?*

8.2 Inter-operable

One of the key guiding principles of the current payments infrastructure is that of inter-operability. Namely that it must be possible to initiate a payment instruction with one financial institution (FI) and/or payment service provider (PSP), and move funds to any other FI or PSP in the same scheme. This principle has created a broader level of acceptability of new payment methods such as mobile payment and Instant Payments, and is enabled through a common switch, to which all other switches must connect.

Inter-operability will continue to be a key guiding principle for any future architecture.

8.2.1 Questions to consider

- *Do you agree that inter-operability should continue to be a key principle of the new architecture?*
- *If **not**, what is your rationale?*
- *Which areas of payment processing should be offered co-operatively or considered as a commodity process?*
- *Are there any functions that should always be in the competitive domain?*

8.3 Co-operation versus competition

Developing core infrastructure as a common utility for all participants has the benefits of cost-sharing and uniformity. However, the architecture must carefully consider the boundary between cooperation on infrastructure and competition between participants to allow differentiated feature/functionality and encourage innovation.

8.3.1 Questions to consider

- *On a scale of 1 to 5 (with 1 being the minimum level of common co-operative infrastructure and 5 being maximum level), where would you rate the boundary between co-operate and compete?*
- *What is the rationale for your assessment?*

8.4 Future-proof and Incremental Deployment

Payments technology will continue to evolve, and it is important that the architecture is able to evolve rather than require radical re-engineering to support new capabilities. For example, if a new data security technique is developed, it should be possible to cut over to this new solution without disrupting the current payment flows.

8.4.1 Questions to consider

- *Do you agree that 'future-proofing' the solution is an important design criterion?*
- *Do you have any specific guidelines and/or principles on how future-proofing should be incorporated?*
- *Do you agree that the new architecture should seek to retire legacy infrastructure?*

9 Practices in other countries

The payments industry is in a period of rapid change. We wish to learn from other countries, but not blindly copy since any new architecture must be relevant for the local market in Nigeria (and Nigeria's role in the West Africa region). Countries to be reviewed include:

- those that have implemented a fundamentally new architecture (such as Australia China and Japan),
- those that have published payment strategy documents or have set a clear strategic direction (such as the UK, Sweden, Kenya, Estonia and Singapore),
- those that have similar demographics and new solutions (such as India and South Africa),
- other key industry bodies such as the World Bank, IMF, BIS, and SWIFT.

9.1.1 Questions to consider

- *Do you recommend other countries that we should include in our analysis?*
- *Are there any white papers or other reference material that you have found particularly insightful when reviewing the payments landscape?*

10 Regulatory and Governance Structure

Creating an appropriate and effective governance structure was a key deliverable from the second release of PSV2020. It is possible that, given the proposed architecture from the PSV2030 review, this structure should be modified. The PSV2030 document will include any recommendations for the regulatory and governance structures and scope.

10.1 Build in PFMI Conformance

The PFMI will continue to form the basis of validating that the payments system is 'Internationally Recognised'. The PSV2030 document should highlight areas where deployment of any new architecture results in closer conformance to these principles.

10.1.1 Questions to consider

- *Would you recommend building in conformance to any other standards? If so, which one(s)?*

10.2 Legal Framework

The Payments System Management Bill is currently passing through the legislative process. The PSV2030 document should highlight any areas of potential change to this legal framework that may be required.

10.2.1 Questions to consider

- *Do you believe that the proposed Payments System Management Bill will be suitable for any likely new payments architecture?*
- *Are there specific technical and/or functional changes that may require new provisions?*

10.3 Regulatory and Governance Structure

CBN provides regulatory oversight of all payment solutions.

Governance is provided by four Scheme Boards (ACH cheque & IP, Mobile, Cards, RTGS) reporting to the PICC. The bodies comprise of industry representatives and CBN. PICC reports to the CBN CoG (Committee of Governors). Under the Payments System Management Bill, the reporting lines will change but the working level structure will remain largely consistent with the structure today.

10.3.1 Questions to consider

- *Do you believe that the current (and potential new structure under PSMB) is appropriate for any likely new payments architecture?*
- *Do you have any suggestions, fine-tuning or radical overhaul, that would create a more effective governance structure?*

10.4 Compliance monitoring

Tools to monitor compliance to the participation criteria should be built into the new architecture, this providing real-time compliance monitoring and period status reports

rather than relying on inspection of prior performance. Examples of compliance checking could be adherence to rule on liquidity and collateral, operational performance standards, resilience and disaster recovery testing.

10.4.1 Questions to consider

- *Do you agree that compliance monitoring should, where possible, be included in the design of any new payments architecture?*
- *Are there any areas of compliance (in the payments space) that should be excluded from the design criteria?*

11 Dependencies

It is expected that the report will identify many dependencies, not least on the availability of telecommunications and power. Key dependencies will be identified, and stakeholders from other industries will be invited to submit comments

11.1 Infrastructure

An electronic payments system is dependent on efficient infrastructure, with a particular emphasis on telecommunications and power. Any specific concerns in this area must be highlighted.

11.1.1 Questions to consider

- *Do you have concerns about the infrastructure required to support an efficient payments system?*
- *If so, which parts of the infrastructure are likely to be the greatest inhibitors to deployment and adoption?*

11.2 Capacity Planning

Training and public awareness may be required to support deployment of any new payments system architecture. Capacity Planning is required at different levels (industry expertise, technical skills, internal service provider training for operational support and customer servicing, compliance and risk training, and end user awareness).

There is currently no formal certification programs for the core skills – technical and operational – that are required within the payments system.

11.2.1 Questions to consider

- *Do you believe that preparing Capacity Planning should be within the scope of the PSV2030 Implementation, or for the industry to handle on an 'as-required' basis?*
- *Which areas of capacity planning require greatest focus?*
- *Should the industry look to provide certification programs for certain roles? If so, which areas should be subject to certification, and should certain roles have mandatory certification?*

12 Any other considerations

We have attempted to create a comprehensive framework for seeking view and suggestions. However, it is highly likely that there are dimensions that are not included above

12.1.1 Questions to consider

- ***Are there any other useful input or suggestions that you would add for inclusion in our further deliberations?***