TIPS
TANZANIA INSTANT PAYMENTS SYSTEM

Building an Inclusive Payments Ecosystem in Tanzania through TIPS

CASE STUDY
MARCH 2025

ACKNOWLEDGEMENTS

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ABBREVIATIONS

B2B	Business-to-Business
B2G	Business-to-Government
B2P	Business-to-Person
BOT	Bank of Tanzania
CI/CO	Cash-in/Cash-out
CPMI	Committee on Payments and Market Infrastructures
DFS	Digital Financial Services
DFSP	Digital Financial Services Provider
FSDT	Financial Sector Deepening Trust Tanzania
FSP	Financial Service Provider
G2B	Government-to-Business
G2P	Government-to-Person
ID	Identification
MNO	Mobile Network Operator
NFIF	National Financial Inclusion Framework
P2B	Person-to-Business
P2G	Person-to-Government
P2P	Person-to-Person
PAFI	Payments Aspects of Financial Inclusion
PSP	Payment Service Provider
RTGS	Real Time Gross Settlement
SLA	Service Level Agreement
TCRA	Tanzania Communications Regulatory Authority
TIPS	Tanzania Instant Payment System
VPN	Virtual Private Network

Content

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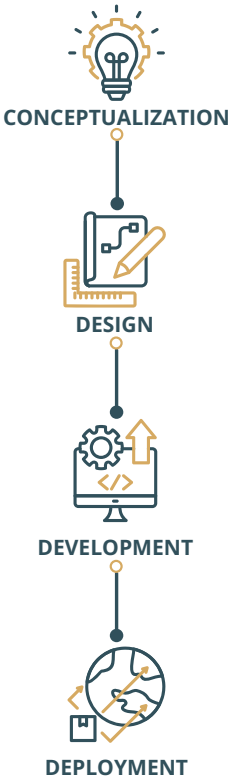
GOVERNOR, BANK OF TANZANIA

Foreword

I am pleased to share this case study illustrating the conceptualization, design, development and deployment of the Digital Public Infrastructure, the Tanzania Instant Payment System (TIPS).

In 2018, the Bank of Tanzania embarked on a revolutionary journey to introduce an interoperable real-time digital payment system. The undertaking aimed to build an inclusive, interconnected, robust, real-time digital payment system that can process low-value transactions.

This case study provides insights into the journey of TIPS's development. It unpacks key decision points, highlights stakeholder engagements throughout the development process, presents the systems' inclusive design features, and provides a glimpse into the future of TIPS.



Despite global challenges, such as the COVID-19 outbreak and the global recession following the pandemic a team of committed Tanzanian developers from the Bank of Tanzania, and other Government entities worked tirelessly in consultation with the financial sector players to come up with TIPS.

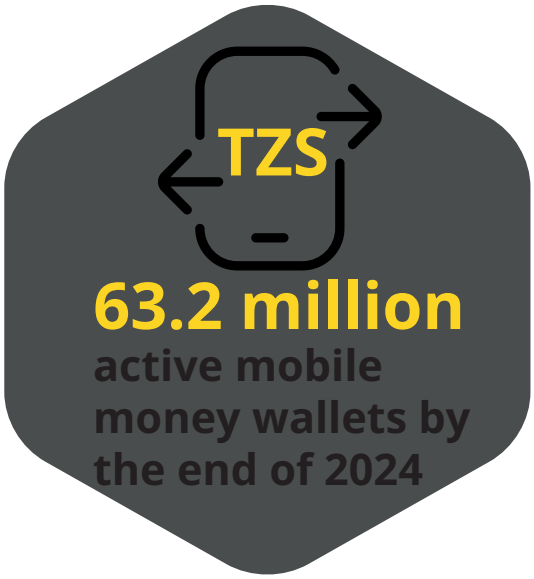
TIPS does not only address seven of the key strategic focus areas outlined in the internal Bank of Tanzania Payment System Vision and Strategy 2017-2028 it is also a strategic initiative under National Financial Inclusion Framework (NFIF II) and further provides the rails for the implementation of the Tanzania Digital Economy Strategic Framework 2024 - 2034. Through its inclusive design, TIPS provides an accessible, effective, inclusive, and affordable financial service infrastructure to all Tanzanians which will stimulate economic growth and contribute to the strengthening of a competitive economy

I trust that this case study will encourage other central banks or financial sector players across the globe to gain confidence in embarking on the journey of establishing real-time, interoperable payment systems and reflect on valuable lessons learned from Tanzania's experience.

Lastly, I would like to extend my profound appreciation to the Government of the United Republic of Tanzania, the Board members, management, and staff of the Bank as well as our development partners for their commitment, perseverance and support that enabled the establishment and success of TIPS.

Background

Over the past two decades, Tanzania has made remarkable strides in delivering inclusive financial services, largely driven by the introduction of mobile money. The Communication Statistics Q4 2024 Report revealed a staggering 63.2 million active mobile money wallets by the end of 2024, showcasing the widespread adoption of this innovative solution (TCRA 2024).



The Tanzania Instant Payment System (TIPS) is a national real-time payment switch developed and operated by the Bank of Tanzania (BOT) to facilitate interoperable retail[1] transactions between Digital Financial Services Providers (DFSPs), both banks and non-banks. In 2024, over 453.7 million interoperable retail transactions were made through TIPS, that is over 29.9 trillion Tanzanian Shillings.

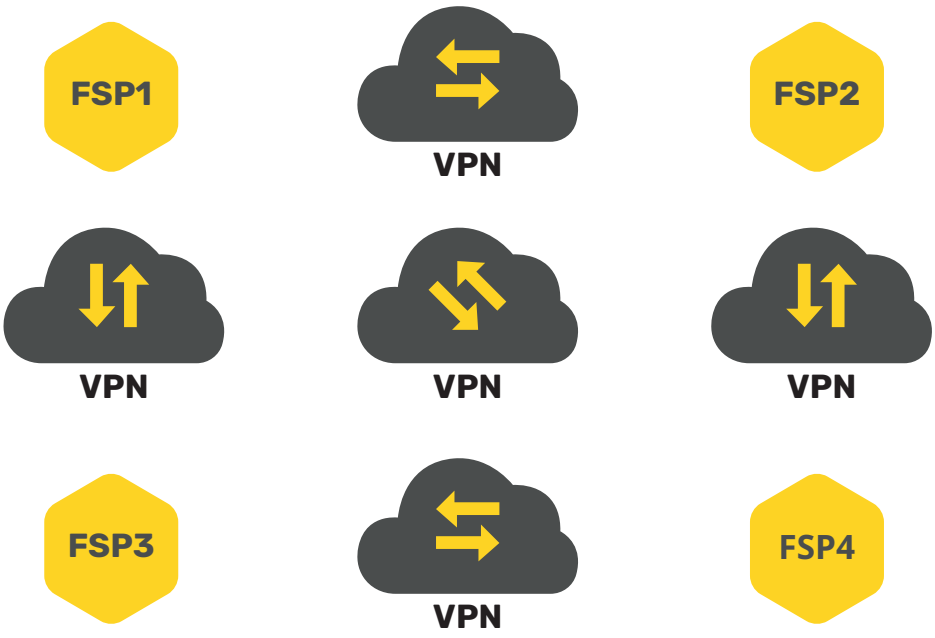
While mobile money emerged as an industry-led innovation, its successful establishment in Tanzania was underpinned by the Government's visionary commitment to adopting a "test and learn approach" to allow providers to continue innovating and investing while the regulator, Bank of Tanzania (BOT), closely observes the solution and its market effects and eventually crafts informed and appropriate regulatory frameworks. A pivotal moment for mobile money came in 2006 with the amendment of the Bank of Tanzania Act, granting BOT the mandate to regulate non-bank entities that offer financial services. Subsequently, in 2007, the BOT issued a "letter of no objection," paving the way for the establishment of mobile money and signaling the country's readiness to embrace technological advancements to address the financial needs of remote, rural, and underserved communities.

1 Retail transactions are transactions of value between 0 to 20 million Tanzanian shillings.

At its inception, mobile money facilitated basic transactions such as cash deposits, withdrawals, and interpersonal transfers within the same network. The landscape evolved further in 2014 when two leading mobile network operators (MNOs) introduced a bilateral interoperability scheme, enabling "off-net" transfers and expanding the scope of digital financial services. Later, the bilateral arrangement was adopted by all 7 mobile network operators. The bilateral arrangement among other things included prefunding, messaging formats etc. This was accomplished through bilateral arrangements as illustrated in figure 1 below.

Despite these advancements, pockets of financial exclusion persisted across the country, underscoring the ongoing need to ensure equitable access to financial services. High transaction costs, limited electronic payment products, and minimal interoperability remained key constraints deepening financial exclusion and cause for heavy reliance on cash among individuals. At national level, a cash dependent economy proved to be costly because it required maintaining a robust cash reserve and increased the risk of financial instability, further necessitating continued efforts to enhance financial inclusion nationwide.

Figure 1: Without TIPS: Connections Through Bilateral Agreements

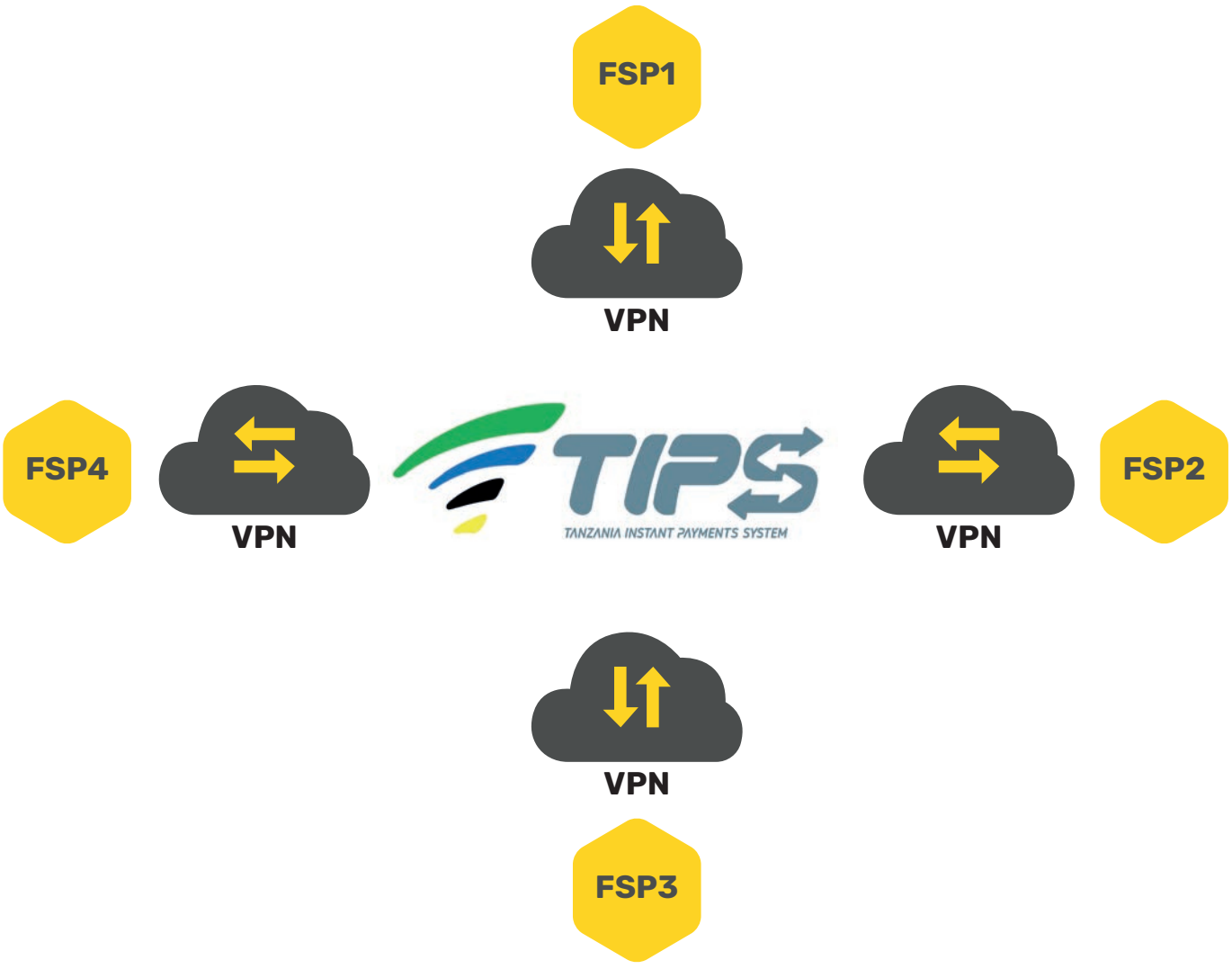


FSP- Financial Service Provider
VPN - Virtual Private Network

Recognizing the imperative to address these persistent challenges and enhance the efficiency and accessibility of financial services, in 2018, BOT embarked on a proactive journey to introduce an efficient interoperable payment system to replace the bilateral arrangements. The undertaking aimed to build an inclusive, interconnected, robust, real-time digital payment system that can process low-value transactions, which are common among underserved consumers. The introduction of such a system would directly contribute to the achievement of seven key strategic focus areas outlined in the Bank of Tanzania Payment System Vision and Strategy 2017-2028.

The efforts culminated in developing the Tanzania Instant Payment System—a national retail payment switch that facilitates instant, interoperable transactions across all digital financial service providers (DFSPs) both banks and non-banks. By digitally linking vast numbers of underserved consumers with the entities they transact with, TIPS is poised to redefine the accessibility, efficiency, interoperability and inclusivity of financial services across the country and stimulate economic growth. TIPS enables payments digitally from anywhere to anyone with transactional account within Tanzania.

Figure 2: With TIPS: Connections Through Multilateral Agreements



FSP- Financial Service Provider
VPN - Virtual Private Network


TIPS
VISA
Lipa Hapa
SCAN KULIPA
LIPA NAMBA
Lipa kwa kadi, Mabenki na Mitand
simbanking
piga *150*03#

The Journey

MAKING A CASE FOR TIPS

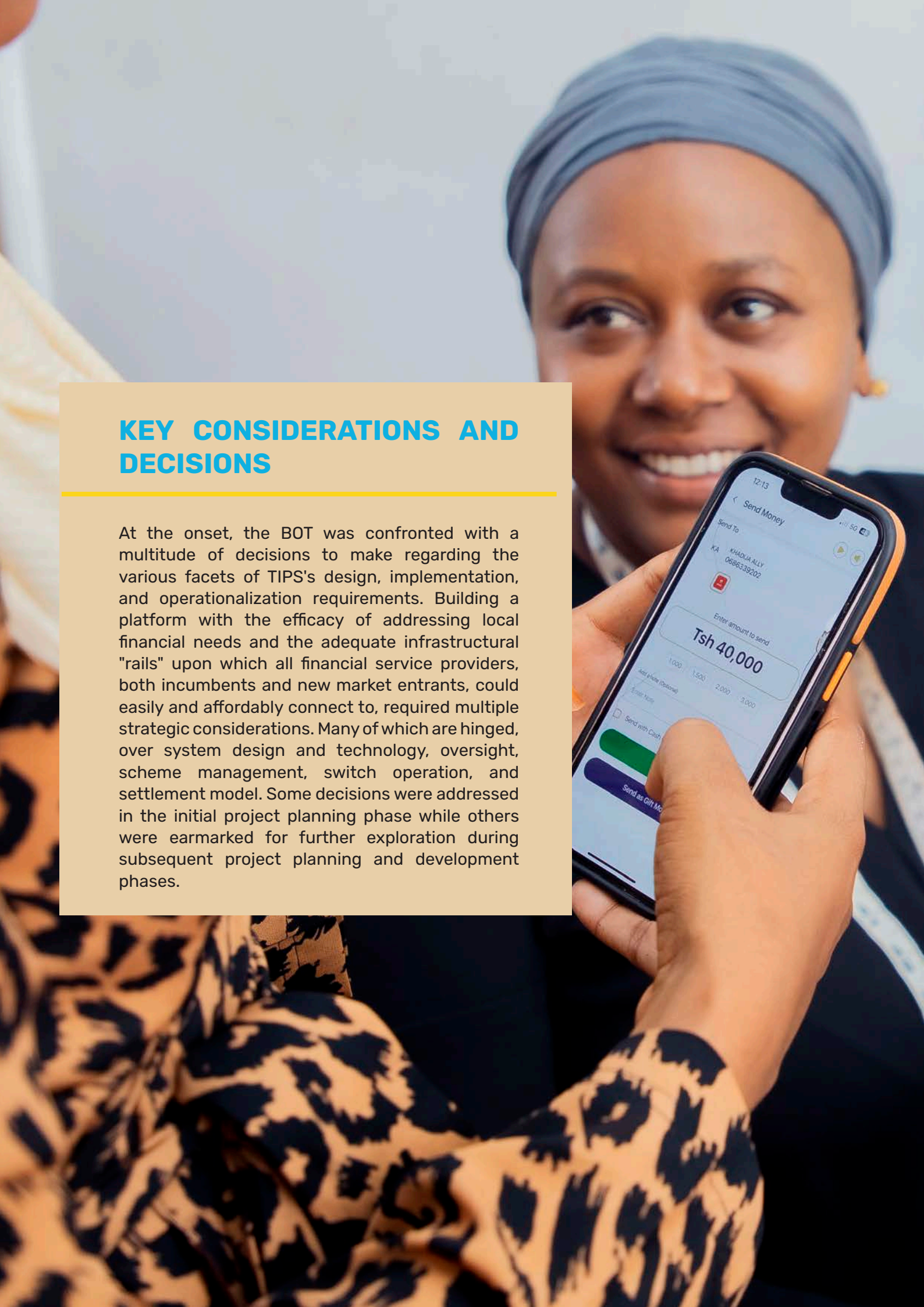
Meticulous considerations, strategic collaborations, and pivotal decisions characterized the process of creating TIPS. Following the Level One Project (L1P) Design Principles[2] on delivering pro-poor digital financial services, BOT, with financial support from the Financial Sector Deepening Trust and the Bill and Melinda Gates Foundation, conducted a comprehensive analysis to determine the key considerations that would lead to a locally suitable real-time retail payment system that meets the needs of underserved Tanzanians both individuals and businesses as well as the DFSPs. The process was marked by iterative steps and collaborative efforts aimed at meeting the accessibility, reliability, usability, and ultimately affordability to end consumers.

Figure 3: Inclusive Payment System Requirements Considered

2 The Level One Project (L1P) Design Principles are "a set of principles and best practices to guide countries, regions, or commercial organizations working in DFS (digital financial services) to improve access to DFS, particularly for underserved populations." The principles were developed as part of The Level One Project, an initiative by Gates Foundation's Financial Services for the Poor program for supporting the creation of inclusive, interconnected digital economies to promote access to financial services for low-income individuals and ultimately foster global growth and opportunity.

KEY CONSIDERATIONS AND DECISIONS

At the onset, the BOT was confronted with a multitude of decisions to make regarding the various facets of TIPS's design, implementation, and operationalization requirements. Building a platform with the efficacy of addressing local financial needs and the adequate infrastructural "rails" upon which all financial service providers, both incumbents and new market entrants, could easily and affordably connect to, required multiple strategic considerations. Many of which are hinged, over system design and technology, oversight, scheme management, switch operation, and settlement model. Some decisions were addressed in the initial project planning phase while others were earmarked for further exploration during subsequent project planning and development phases.



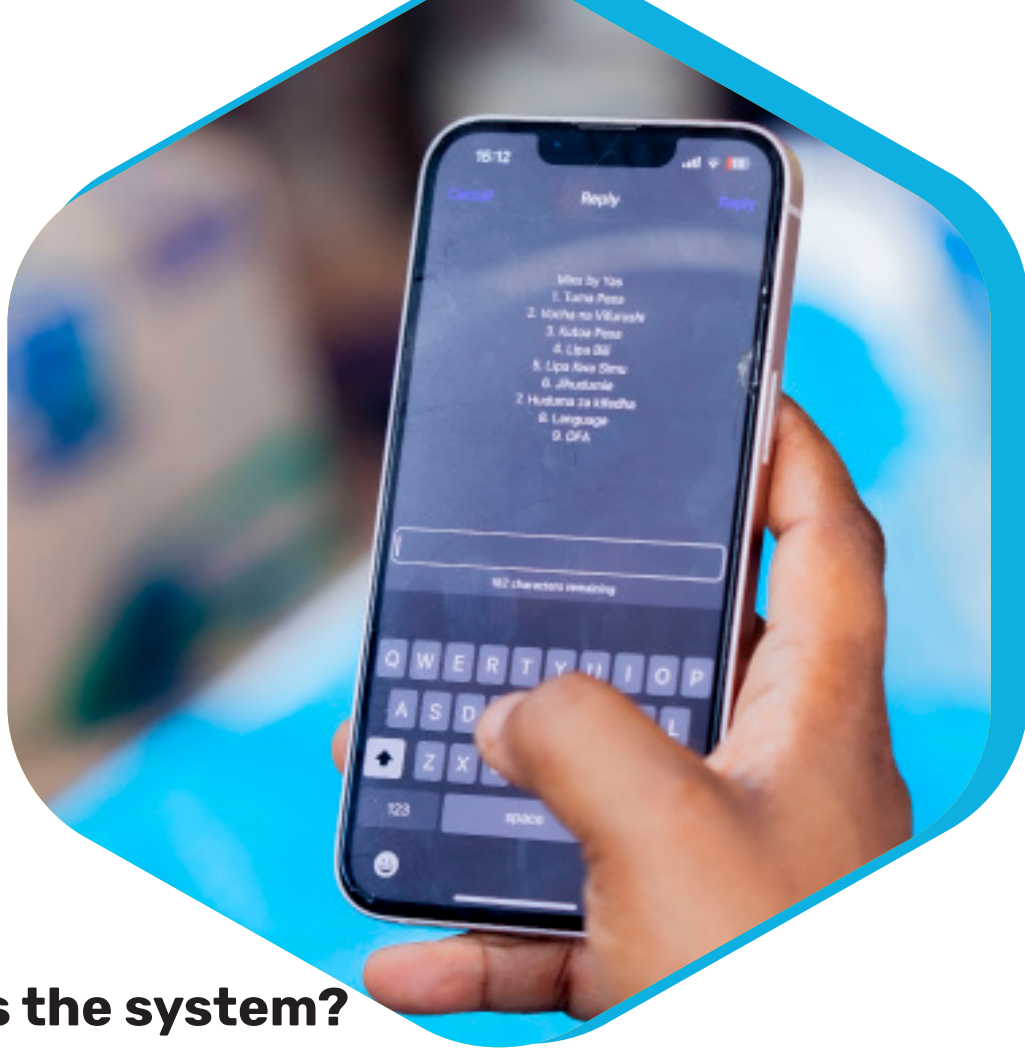
1. To buy or to build?

The consideration that took precedence over others was whether to opt for an off-the-shelf solution (buy) or develop an in-house system (build). This was a critical decision because it was a key determinant of design and development choices moving forward.

The BOT strategically decided to build TIPS inhouse from scratch, pulling resources and expertise from the Bank and other Government entities.

Building the system from scratch meant the system could accommodate the requirement of the Bank from the design level and leverage the good principles from the existing market practices contrary to the decision of getting an off-the shelf solution that will require customization and adoption. This decision was not merely a preference, but a decisive action taken to uphold the principles of efficiency, sustainability, adaptability and sovereignty in Tanzania's digital financial landscape.

In the long run, the experience obtained from developing the solution from scratch would enhance local technical capacity to address community-specific needs and ability to leverage technological advancements and the widespread adoption of mobile phones in creation of innovative solutions to advance financial inclusion on a broader scale. This approach provides BOT with the ability to carry out future expansions, upgrades, changes or maintenances, and provide timely system support as well as ensure low cost of operations. Thus, enabling TIPS to become a foundation Digital Public Infrastructure.



2. Who operates the system?

The next decision was whether to have a switch operated and supported by the BOT or to outsource the switch management to an independent institution.

Considering BOT already operates the systemic important national payments systems including Real Time Gross Settlement (RTGS) system, which has similar operational requirements to TIPS, the choice to embed TIPS within BOT's existing structures was apparent.

The key driver for that decision was the desire to expedite the system's establishment, capability, resource mobilization, and leveraging from the BOT's influence in the market as revealed in the business case. Otherwise, it would have taken time for an external party to be established and later become credible enough to manage a national system's operation.

Operating, overseeing and servicing the system within the BOT's existing structures enabled the project to progress promptly and be available for an extensive amount of time, meeting the Service Level Agreement (SLA) requirement of DFSPs.

TIPS's operations are handled by a technical team that deals with development and 24/7 support, and another team that focuses on policy oversight and compliance enforcement, including system rules, commercial agreements, and key decisions on development timelines. The approach offers greater control and knowledge transfer opportunities for the Bank when compared to outsourcing.

3. Should participating in TIPS be mandatory?

Another decision that the BOT needed to consider was whether the system participation would be fully optional, partially required, or mandatory for the market-players

The BOT resolved to mandate participation of DFSPs for all inter-PSP transactions through TIPS. This has been taken gradually as more use cases are deployed in TIPS platform and more DFSPs are onboarded.

A semi-mandatory approach was necessary because TIPS was created to dismantle the exclusive and closed-loop systems that bilateral agreements had created, particularly the market fragmentation that were negatively impacting the utility of payment services for end-users. By promoting openness and interoperability through TIPS, the aim is to mitigate fragmentation and enhance the accessibility, usability and efficiency of digital payment services across Tanzania as well as effectively promote innovation and reduce cost of operations of DFSPs.

At the moment, TIPS's stakeholders are BOT; DFSPs -the banks and non-bank e-Money Issuers that offer transaction accounts to end-users and facilitate transactions; and the end-users -the consumers, businesses, and government agencies who rely on TIPS-enabled services provided by DFSPs to conduct payments among themselves. Participating DFSPs directly connect to the TIPS platform, enabling a variety of services and applications. Other stakeholders that are non-transaction-account-providing Payments Service Providers, only access TIPS indirectly through connected DFSPs.

INCLUSIVITY BY DESIGN

BOT conducted a comprehensive assessment of the existing financial landscape, highlighting the prevailing challenges and opportunities. BOT also held meetings with stakeholders, providing invaluable insights into the diverse needs and preferences of users across the spectrum. Stakeholder engagements revealed that the common requirements for the system that ensues would be financial viability, ease of establishing connectivity, and switch capacity, availability and security. With a clear understanding of the user expectations, the groundwork was laid for the conceptualization and development of TIPS. To enrich the philosophical underpinnings of TIPS design, the BOT also considered the insights derived from the Committee on Payments and Market Infrastructures (CPMI) and the World Bank's Report on Payments Aspects of Financial Inclusion (PAFI). Additionally, BOT examined the experiences of countries like India and Jordan to obtain invaluable lessons on national retail real-time/fast payment system implementation.

Like most Instant Payment Systems, TIPS has two components: a technical operational component and a scheme governance component. The operating platform has seven functions: a switch that processes payment information in real-time, a directory service for addressing payment destinations, a real time settlement service that calculates each DFSP's financial standing, open API connection points for DFSPs, billing capacity for deducting fees, a scheme operation dashboard for oversight, DFSPs dashboard for self-service, and a centralized fraud prevention and management utility for security. TIPS's scheme management functions include operating rules and advisory groups to ensure fair competition, stakeholder communication, and engagement.

Figure 4: TIPS Components: Operational System and Governance Sheme

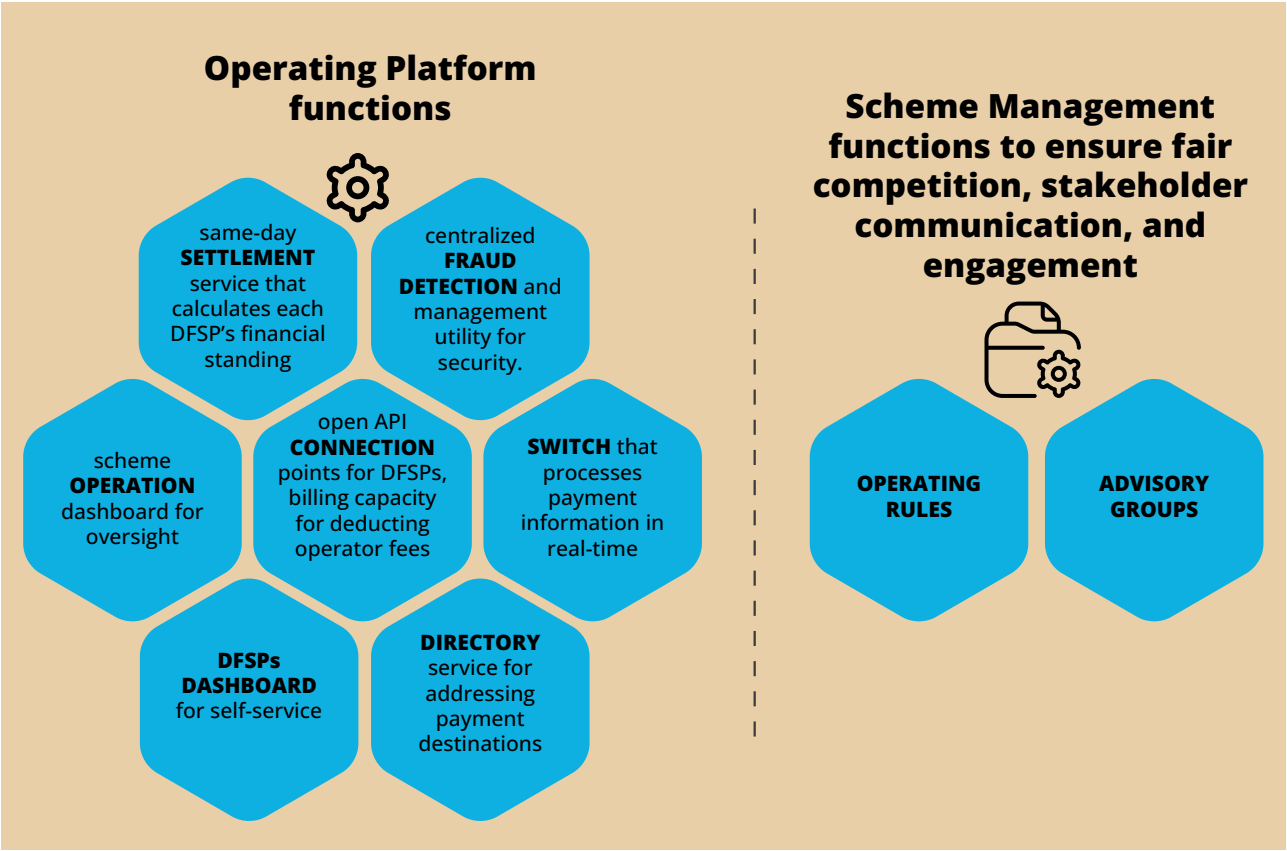


Figure 5: TIPS Design Features

Open and Interoperable
All licensed financial service providers (FSP), including banks and non-banks, are allowed to access the system. This enables any payer to transact with any payee and encourages competition by enabling multiple providers to connect with each other and expand their reach to other DFSPs, fostering innovation and efficiency across the sector.

Real-time payment processing
This ensures that payer and payee accounts are debited and credited instantly, with both sender and receiver receiving immediate notifications. Using modern technology, TIPS is available 365 days a year: impliedly 7 days a week, 24 hours a day

Ultra-Low-Cost
For DFSPs to offer transactions to consumers or merchants at zero or near-zero pricing, the switch must operate at an exceptionally low cost. TIPS currently operates on a not-for-loss basis.

Payment Transparency
The scheme advocates for transparency of fees charged to consumers before transaction execution.

Single switch, multiple use cases
As a digital foundation infrastructure, TIPS enables utilizing a single switch for all retail use cases, including Person-to-Person (P2P), Person-to-Business (P2B), Person-to-Government (P2G), Government-to-Person (G2P), Business-to-Person (B2P), Business-to-Government (B2G), Business-to-Business (B2B), Government-to-Business (G2B), and Cash-in (CI)/Cash-out (CO), eliminates complexities and costs associated with multiple switch scenarios. This approach provides for economies of scale thus enabling lower transaction costs in the long run.

Request to Pay
The "Request to Pay" messaging feature enables both the payee and the payee DFSP to initiate payment requests, facilitating detailed transaction tracking and enhancing user convenience.

Payment Addressing
TIPS allows for the use of aliases to make payment addresses easier for end-users to remember, linking transactions to the correct accounts and wallets across different banks and non-banks. These aliases are the mobile number, bank account number, wallet ID, merchant ID as well as other types of IDs that may be considered when the need arises.

Inclusive Governance
TIPS has an inclusive governance structure to ensure that DFSPs have the opportunity to participate in determining the operating rules of the scheme. This inclusive approach is collaborative involving discussions, consultations, and consensus or through majority voting by participants.

Transaction-reversal
The "Transaction-Reversal" feature provides for an opportunity for users to request for reversal of transactions that have been erroneously initiated.

Same-day settlement
Same-day settlement ensures that financial obligations among DFSPs are settled within the day of payment execution, potentially through multiple settlement periods. This practice minimizes liquidity and counterparty risks, thereby lowering the overall cost of the system.

Fraud Utility
TIPS inbuilt "Fraud Utility" feature is integral to enhancing security measures within the TIPS ecosystem, encompassing mechanisms for reporting and preventing fraudulent activities, thereby safeguarding the integrity and trustworthiness of the payment system.

Connectivity to other Systems
TIPS is designed to allow connectivity with other payment systems and schemes. This enables TIPS to exchange transactions, where permitted by scheme rules, with other systems, including similar systems in other countries, to effect scheme-level (instead of individual DFSP) connections for cross-border payments.

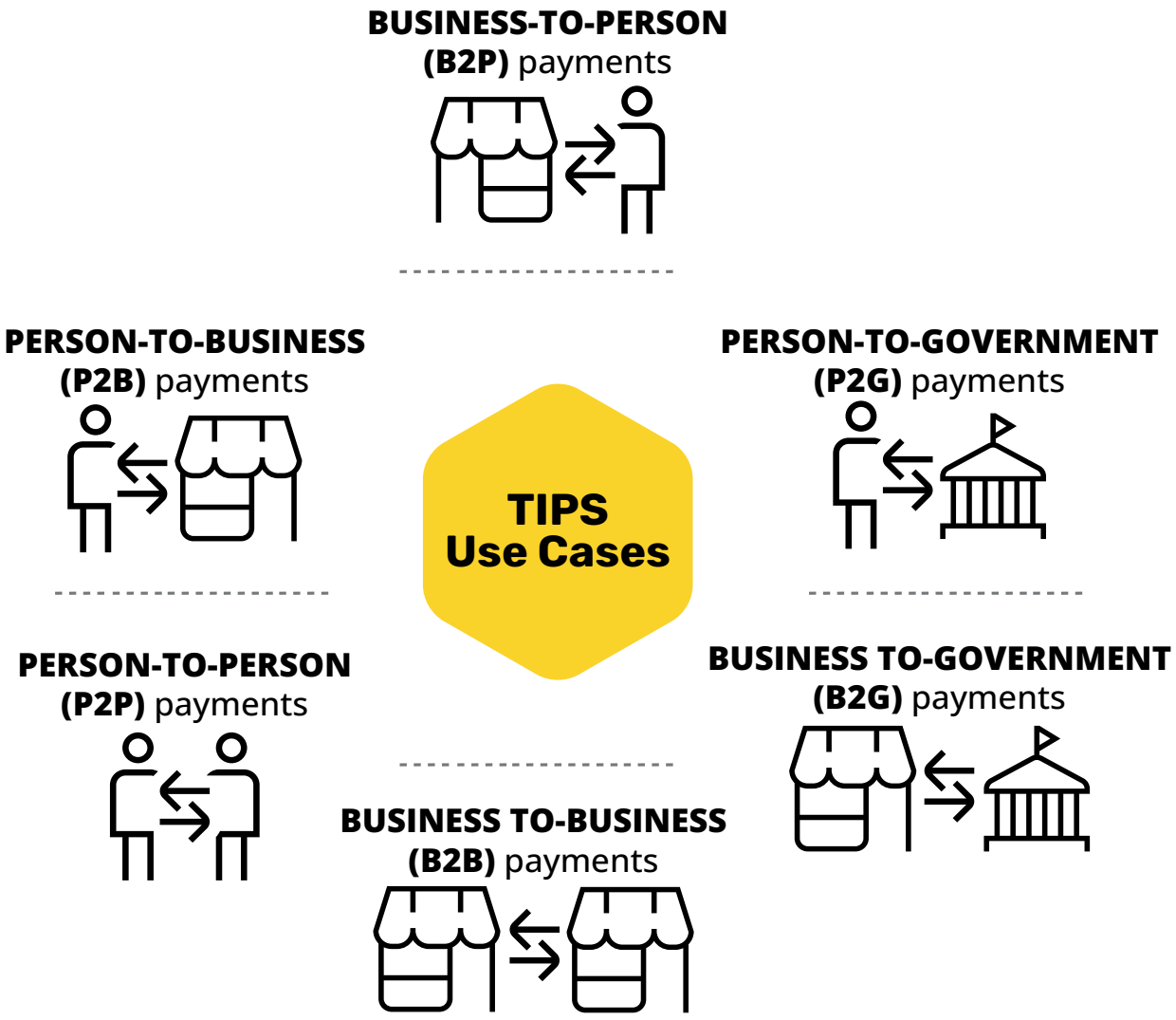
Regulatory Oversight
TIPS enables BOT to monitor transactions for all DFSPs in real-time or near real-time, streamlining regulatory compliance, promoting safe and efficient payments and, where necessary, enforcing change.

DEVELOPING TIPS USE CASES

End-user needs was considered in the early stages in creating the TIPS Business Case. Insights from global markets made the system's ultimate design focus on common payment services user needs such as utility, safety, ease of use, stability, and acceptable cost.

To accommodate all these requirements, BOT opted for an agile approach to managing the project, onboarding DFSPs in batches and developing and implementing use cases in phases. This approach allowed for quick iterations to the system's design and functionalities in alignment with stakeholder needs as well as incorporation of lessons learned from the pilot phase into subsequent phases of the project, contributing to a smooth and efficient execution, and avoiding a case of total market failure. Given the significance of P2P remittances and merchant payments in driving regular mobile payment usage and reducing reliance on cash, launching with P2B payments alongside P2P transactions was deemed essential. The range of use cases currently supported by TIPS include P2P, P2B/P2M, B2B, B2P, P2G, and B2G transactions.

Figure 6: TIPS Use Cases



In P2P transfers, users can conduct domestic Person-to-Person transfers, paying to mobile phone numbers, bank account numbers, or TIPS aliases. For P2B/P2M payments, individuals can make payments to merchants or billers, whether face-to-face or remotely, using methods such as QR codes or till numbers. With the development of TANQR, a standard QR code system that enables fund remittance to any financial service provider instead of payers struggling to find merchants that accept money from their FSP. TIPS also has an inbuilt Directory Service that registers and maps identifiers to DFSPs and stores merchant identifiers for businesses. Also, the system incorporates features such as text message capabilities that allow payers to include text messages to payees alongside payments (custom narration to a transaction). The prioritization of "Big 2" use cases—P2P and P2B—at launch proved to be a practical approach because it enabled the system participants to measure user behavior and system performance effectively, paving the way for the gradual incorporation of more complex use cases in the future without overwhelming the system or users. In providing more value to TIPS, cross-border Person-to-Person transfers or remittances use case is being developed, which has garnered a lot of support from the DFSPs, FinTechs, and diaspora users alike.

Other system features such as “Request to Pay” messaging, “Transfer-reversal”, and “Fraud Utility” have been developed alongside the use cases to enhance operational efficiencies and security protocols. The “Request to Pay” messaging feature enables the receiver through the receiving DFSP to initiate payment requests, facilitating detailed transaction tracking and enhancing user convenience. The “Transfer-reversal” feature empowers users to reverse transactions erroneously initiated and TIPS inbuilt “Fraud Utility” feature is integral to enhancing security measures within the TIPS ecosystem, encompassing mechanisms for reporting and preventing fraudulent activities, thereby safeguarding the integrity and trustworthiness of the payment system.

The Settlement Approach

TIPS operates on an immediate continuous gross settlement model to ensure that financial obligations among DFSPs are settled within the day of payment execution, with two operating windows. This model operates on prefunding basis which aligns with the real-time nature of TIPS and enhances efficiency of payment settlements between participants while minimizing liquidity and counterparty risks, thereby lowering the overall cost of the system.

Additionally, TIPS has adopted a deferred net settlement model for interchange fees charged amongst DFSPs and potentially for collecting switch fees. TIPS has adopted both models to accommodate the needs of DFSPs considering their nature. The TIPS system is directly integrated with the RTGS to support ease and effective funding and de-funding of DFSPs accounts.

TIPS IN ACTION

TIPS selling point to banks was the ability to provide real-time, low-value retail payments with other DFSPs using a single connection point, offering them a "level playing field" with MNOs.

For MNOs, BOT needed to focus on commercials, showing the cost-saving benefits of implementing a national switch.

BOT prepared itself immensely to execute TIPS, building both its financial and technical capacity to design, develop and operate a nationwide instant payment system. As TIPS began to take shape, rigorous testing and validation processes were undertaken to ensure its robustness and reliability. This involved simulated scenarios, stress testing, and real-world simulations to assess its performance under various conditions. Concurrently, efforts were made to address regulatory and compliance requirements, safeguarding the integrity and security of the system.

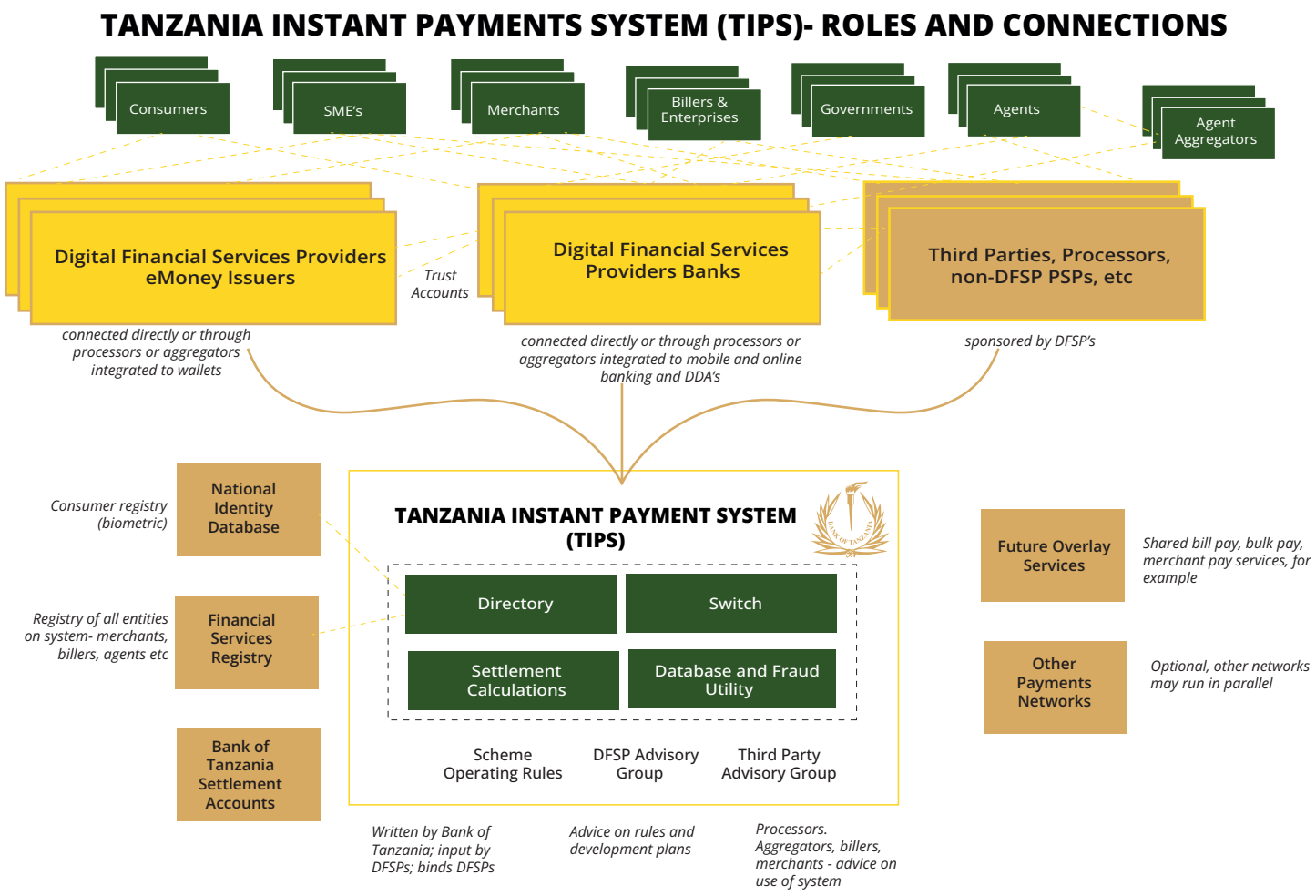
The risk of system failure was one which TIPS needed to mitigate early on by creating redundancy protocols. The system's infrastructure design incorporates a primary and secondary sites to support business continuity. Yet, the most important metric for measuring the success and the compass that would guide the project strategic priorities, remained to be building volume to realize economic benefits for DFSPs and end-users. BOT needed to make a business case that could get stakeholder buy-in and convince them to transition from the legacy bilateral integration, operated through bilateral agreements, to TIPS, a unified platform with multilateral agreement.

For banks, BOT needed to show how TIPS benefits would eventually absorb the cost implications, particularly on the extent of change or updates that would need to be made to their back-office systems to accommodate the platform's technical specifications requirements. Banks typically operate on older systems, and the expense of adopting TIPS depended on existing technology decisions and strategic outlooks. As such, banks stood to incur varying costs depending on whether they were simply enhancing existing technologies or completely overhauling their legacy payment platforms alongside TIPS integration. Other cost determinants were based on whether they use internal staff or contract a commercial bank vendor to enact the change.

TIPS selling point to banks was the ability to provide real-time, low-value retail payments with other DFSPs using a single connection point, offering them a "level playing field" with MNOs. Further, TIPS aimed to reduce the costs to banks associated with funding multiple wallets at the MNOs to support their interoperable transactions.

For MNOs, BOT needed to focus on commercials, showing the cost-saving benefits of implementing a national switch. Unlike banks, MNOs had already invested so much in interoperability and merchant payment solutions through bilateral agreements and were enjoying more favorable rates in the legacy system. TIPS offered a reduced number of technical connections and eliminated the need to pre-fund interoperable payments. While BOT allow MNOs to connect to TIPS by offering the switch entirely free of charge and a settlement system that reduced their prefunded working capital, there remain some concerns over the question of switch ownership, interchange and end-user pricing. There are strong sentiments in favor of TIPS remaining as a technical switch but not a price regulator, leaving the DFSPs to set their own commercial agreements.

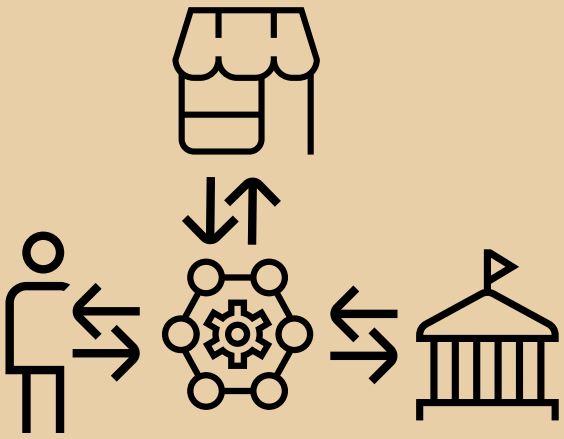
Figure 7: TIPS Roles and Connections



Focusing on the Future

Ultimately, BOT's goal is to ensure affordability through fair competition and pricing within TIPS to reach the overarching goal of financial inclusion. Stakeholders are largely involved in operations; however, the BOT retains oversight of the system to guarantee the inclusiveness of TIPS and ensures a robust and diverse ecosystem for instant payments in Tanzania. An apt balance of competitive pressures and regulatory requirements is needed to ensure system sustainability. Yet, BOT has allowed for the creation of a system governance committee that is comprised of representatives from all types of system stakeholders, banks, and non-banks which further enhances accountability and governance. Therefore, throughout the journey, collaboration remained a cornerstone, with partnerships forged across sectors to leverage expertise and resources. From government agencies to financial institutions and technology providers, each played a vital role in advancing the TIPS initiative.

1.5 Million Transactions DAILY



TIPS success is largely attributed to inclusive strategic stakeholder engagement, robust system design and development methodologies, and meticulous capacity planning. Strategic stakeholder engagement ensured alignment with the needs of key participants, fostering buy-in and support throughout the project lifecycle. Additionally, adherence to agile development methodologies and a phased rollout approach of use cases, channels and DFSPs that facilitated adaptability to evolving requirements, ensuring the system's responsiveness to stakeholder feedback and industry dynamics. Moreover, meticulous capacity planning, encompassing both technical capabilities and financial resources, ensured the system's scalability and sustainability, paving the way for seamless operation and future expansion. These key success factors collectively contributed to TIPS's successful implementation, positioning it as a reliable and efficient retail payment infrastructure in Tanzania's financial landscape.

Today, TIPS processes close to 1.5 million interoperable transactions within DFSPs per day, underscoring the system's widespread acceptance, utility, efficiency, and robustness. However, this figure merely scratches the surface of TIPS's capacity. Currently, the system has been benchmarked to handle three times the current capacity, with ample room for expansion and optimization to accommodate growing utilization rates. In 2024 alone, TIPS facilitated over 453.7 million

retail transactions valued at 29.9 trillion Tanzanian Shillings, highlighting its significant role in the digital payment landscape. Despite its inherent complexities, the deployment of TIPS has largely remained on track, with any delays attributed to commercial negotiations and agreements. Presently, 45 DFSPs utilize the system, and new entrants can easily connect to TIPS. Valuable insights and user feedback obtained from each phase of the TIPS project continue to drive iterative improvements and the development of additional use cases. This ongoing evolution ensures that the system will continue to expand and enhance end-user utility.

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