

The Level One Project Guide

Designing a New System for Financial Inclusion

The Bill & Melinda Gates Foundation believes that everyone benefits from an economy that includes everyone. Yet today, billions of people—particularly in the world’s poorest countries—are excluded from the formal economy and miss out on the many advantages that its financial systems offer.

We need to change this. We have the power to change this.

Thanks to the rapid growth of digital payment systems and the ubiquity of mobile technology, we now have the power to build upon existing infrastructure within individual countries to address this inequality.

This belief is at the heart of The Level One Project—our initiative to help level the playing field by working across public, private and nonprofit sectors to create inclusive, interconnected digital economies in every country around the world.

This paper introduces the *Level One Project Guide*, a framework for governments, NGOs, financial institutions and non-bank payment providers to establish new national shared financial systems. The paper also discusses the key principles behind the Level One Project Guide, and the broader research upon which it’s based.

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Executive Summary

Payments are the connective tissue of a financial system. They link payers with payees, allow governments to transact with their citizens, and connect friends and relatives in networks of financial support.

Yet roughly 2.5 billion people in the world don't have access to a traditional bank account—77 percent of whom live on less than \$2 a day. The problem is not that the poor don't use or need financial services—studies show that they do—but that the tools which the economically disadvantaged are forced to utilize are unreliable, expensive and hard to use. As a result, they usually struggle to stitch together a patchwork of informal, often precarious arrangements to manage their financial lives. Research shows that the right financial tools at critical times can determine whether a poor household can capture an opportunity to move out of poverty, or weather a shock without being pushed deeper into poverty.

Based on evidence from a number of studies, we do not believe the problem of financial inclusion will be adequately solved by simply expanding microfinance or other currently existing structures, nor will they be sustainably addressed by the down-market movement of traditional service delivery channels or instruments. No amount of goodwill or government mandates will solve the core problem constrained as they are by current system infrastructures, the economics do not work for most commercial players. That is, until poor customers are profitable in the marketplace on a standalone basis, we will not see sufficiently aggressive

commercial attempts to reach them at scale.

Fortunately, two trends are creating an opportunity to eliminate the barriers preventing us from bringing financial services to the poor, and creating a shared digital financial system.

First, mobile technology has spread at an astonishing pace in the developing world. According to the World Bank, mobile signals now cover some 90 percent of the world's poor. This presents an incredible opportunity not previously available to reach the economically disadvantaged.

Second, as explained in 'Fighting Poverty Profitably,'¹ emerging digital payment technologies have the potential to strip 90 percent of the costs out of transactions, with ultra-low per-transaction costs. In addition, an open platform approach to digital payments technology has the potential to spur innovation, bring in new players, and generate substantial economic value for providers, individuals and the economies of developing markets. Indeed, acting in the interest of the lowest-income citizens can result in a catalytic, level playing field for industry participants to compete and innovate for the benefit of all.

However, most payment systems suffer from several deficiencies which prevent their rollout into poor and rural communities. For the most part they involve a payment system infrastructure that is an arcane mix of costly connections; they involving multiple payers and rent-takers; they have slow innovation cycles; and they were designed to process transaction sizes

far beyond the reach of the 77 percent of people with no bank account, who survive on less than \$2 per day.

Over the past 18 months, the Bill & Melinda Gates Foundation has developed the *Level One Project* an initiative intended to enable country-level digital financial systems that bring the poor into the greater economy for the benefit of all. The *Level One Project Guide* is a principle element of this initiative. Its purpose is to illustrate what a system designed to include the very poor might look like, to outline how it responds to specific user requirements, and to support a robust interactive dialogue within the community interested in serving the financial needs of the poor.

Ultimately, our vision for the *Level One Project* is to create a more level playing field with an economy that includes everyone, and in which everyone benefits—the poor, bankers, mobile operators, payment technology companies, the government, and more.

At the heart of the *Level One Project Guide* is a national digital financial services system, enabled by shared, open, standards-based components, including an interoperability service for transfers, and fraud and risk management services. The system is governed by its direct participants: the providers of end-user digital financial services, who offer account opening services, consumer and agent management services, and merchant digital payment services. These players connect with traditional payment service providers to ensure that payment services are integrated at a national (or

1. Please visit the following URL for the full report: <https://docs.gatesfoundation.org/Documents/Fighting%20Poverty%20Profitably%20Full%20Report.pdf>



Photo: Frederic Courbet

even regional) level and can flow across the system.

The approach that underpins the *Level One Project Guide* is based on well-understood technology and the experience of several efforts that have re-engineered national retail payment systems in countries as diverse as Mexico, Peru, Australia, and Jordan. We've also taken lessons learned from traditional and emerging payment systems, engaging several hundred stakeholders in more than 25 countries over the past 18 months to review and validate the *Level One Project Guide*. Their input was especially critical in defining a set of core use cases (see 'User Requirements') for individuals and organizations, and for defining design principles that underlie this guide. An accessible and affordable system for the poor must include: push payments and same-day settlement; immediate funds

transfer; and open-loop relationships between providers (i.e., accredited participants). The system must also make use of well-defined standards, address fraud and security, support payment irrevocability; and provide tiered "know your customer" (KYC) requirements in proportion with individual user demands of the system.

The *Level One Project Guide* is a vision for how a shared financial system can work, country by country, recognizing there may be different starting points. There are countries just starting on the digital money journey, countries that are struggling with digital money systems that currently experience low usage, and countries with flourishing digital money implementations that want to build a set of comprehensive and competitive financial services and applications on top of digital payments, such as credits and insurances. The technology, business

model, and policy recommendations detailed below represent long-term system investments that reduce risk and create far more value for poor people, as well as a productive national economy which cuts the cost and price of transactions by reducing the complexity of low-value payments.

The Level One Project is only one part of an overall effort by the Gates Foundation to help the poor access financial services and thereby improve their lives. Connecting poor people to a digital financial system will not solve all the cost barriers to reaching poor people with financial, utility, and other services. However, this foundational work will strip substantial cost out of the system, paving the way for more robust commercial efforts to serve the poor—and in doing so, help to create an economy that benefits everyone.

The Guide for a Digital Payment System

THE SYSTEM

At the heart of the Level One Project Guide is a national system, enabled by shared, open, standards-based components. The system is designed to accommodate variability in local rules, structures, and the existing regulatory framework. The system either provides or contracts for core shared operating components including the interoperability service for transfers (IST) and the fraud and risk management service (FRMS). Structured as a cost-recovery or not-for-profit model, the by-laws and operating rules for IST and FRMS commit to providing low-cost payments capabilities that can support the needs of the poor.

The system is governed by the direct participants: digital financial services providers that connect directly into the system. These direct participants—including full-service retail and commercial banks, special-purpose payment banks, non-bank service providers and other entities that provide digital services—are fiduciaries in the system, responsible for value stored and transferred on behalf of their customers.

These direct participants can be collectively thought of as *DFS (Digital Financial System) providers*. DFS providers have relationships with consumers, merchants, and other enterprises; provide digital financial services to these end parties; and operate their own digital money platforms. Key components of these platforms interact with the IST and the FRMS. These components include account opening services and consumer and

agent management services. Merchant and agent account management may be offered by DFS providers but in the Level One Project Guide it is shown as a shared service, based on the belief that there are core services that may be more efficiently done as a central service at scale, such as identity management in a shared agent network. Regulation and economics will drive whether services in addition to the IST and FRMS are shared as common “rails” for system participants. DFS providers may offer differentiated management for on top of the core shared services.

The *Level One Project Guide* anticipates and provides for a wide variety of providers who are not direct participants, but use various capabilities as a part of their own products and services. These indirect providers access the system through relationships with participating DFS providers. Technical, business, and application rules still apply to indirect providers. The system is controlled but open, in order to accept innovation from across the entire ecosystem.

The system enables participating DFS providers and other indirect providers to easily, and at low cost, transfer payments transactions to others. This is done through the design and implementation of open and accessible platform components, supporting operating rules, and a variety of usability programs.

A more detailed description of these key components can be found in the “Key Components of the *Level One Project Guide*” appendix.

WHY A NEW SYSTEM?

The digital payment system we describe here is modeled as a new system designed to meet the needs of lower income, unbanked consumers, while existing simultaneously and in parallel with the current bank-centric payment systems that serve consumers with higher incomes. The new digital financial system can and should work efficiently with existing banking systems, at either a national or even a regional level.

But why not simply expand these existing systems? The Level One Project Guide proposes a new system, in recognition that existing payment systems in countries with large populations of poor unbanked people are today serving only a very small percentage of the highest-income population, and have shown little evidence of success in serving the poor effectively or efficiently. These systems’ enrollment models, risk management models, and operational models are geared toward high-income customers with relatively low transaction volumes and relatively high dollar amounts.

DESIGN PRINCIPLES FOR THE DIGITAL PAYMENTS SYSTEM

Certain payment system features have been identified as enduringly valuable for serving the needs of the poor and enabling a system in which the poor are profitable to serve on a standalone basis. The following system design principles—which can be found individually in various existing and emerging payment systems—were used in developing the Level One Project Guide.

System Features

Open loop: The system should be an open loop, with the objective of encouraging all qualified participants to join. Open-loop systems avoid duplication of efforts by individual participants, which keeps costs down and optimizes services delivered to end users. Ultimately, an open-loop system achieves interoperability through the direct participation of all providers.

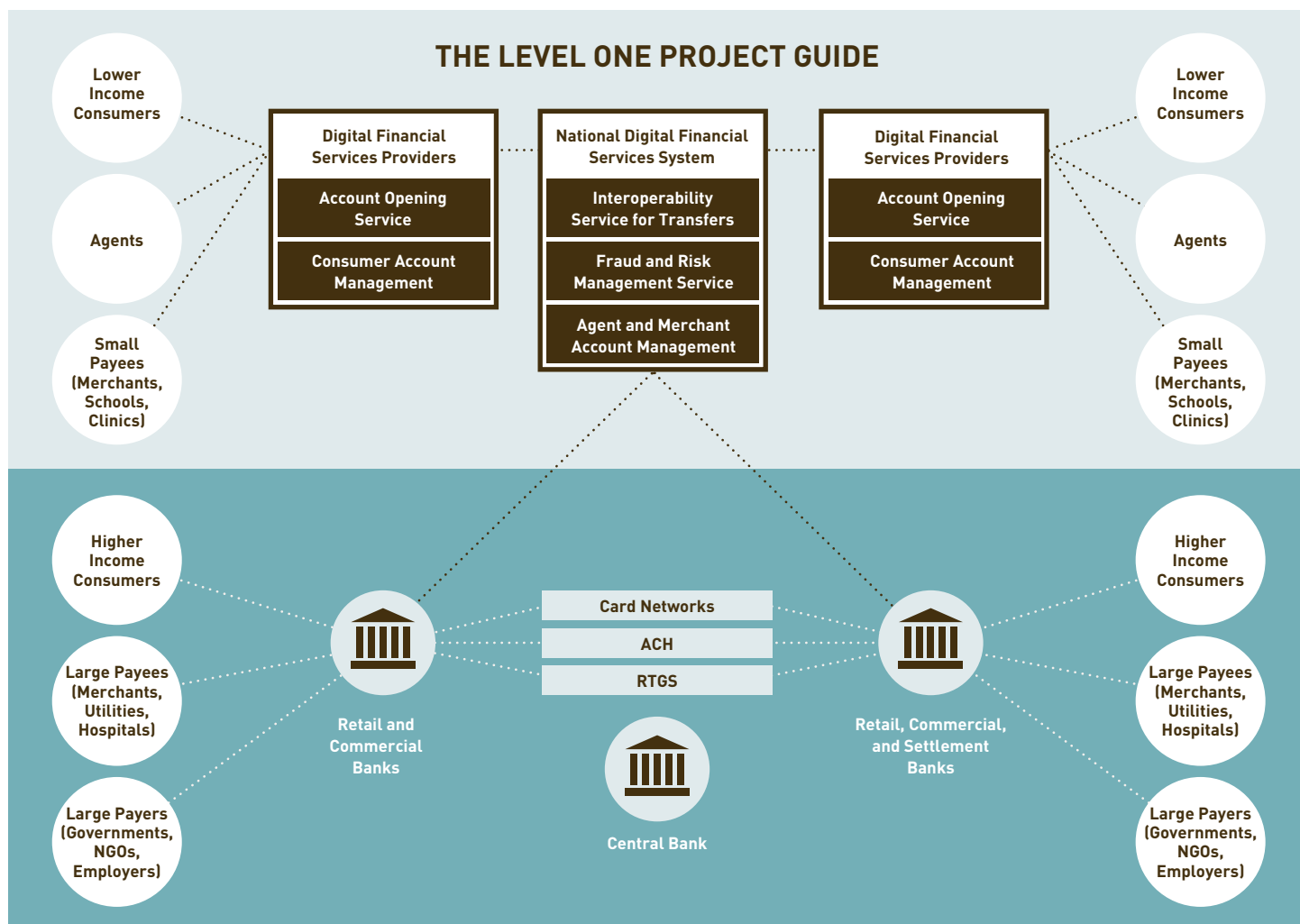
Immediate funds transfer: The system should make funds available to the payee in near-real time, providing immediate notification of payment from the payer to the payee. This feature is both demonstrably possible (as many countries have implemented this in various payment systems) and logically necessary to replace cash, which is

another form of immediate payment.

Push payments: The system should effect push rather than pull payments. Push payments, such as an ACH-type employer direct payroll deposit, work when the payer instructs their account holder to move money to the payee’s account holder. This contrasts with pull payments, used in card and direct debit systems, which work when the payee’s bank requests money (“pulls”) money from the payer’s account holder. Existing push payments systems have demonstrated lower fraud rates and lower system costs than pull systems. Note that a push system can incorporate a request message from the payee (for example, a message from a merchant requesting payment), but the transaction doesn’t happen until the payer instructs the provider to send the funds.

Same-day settlement: The system should settle funds among participants at least once a day, to ensure the system and its participants have as close to zero exposure from a failing participant as is possible. This controls liquidity risk, and therefore reduces costs. Note that the timing of end-party settlement (when the accounts of the paying party and the receiving party are actually debited and credited) does not have to match the inter-provider settlement timing. This means, for example, that a transaction can be instantaneous between the two users, but their participant institutions are settling with each other later that day.

Open, international standards: The system should adhere to internationally accepted payments standards (such as ISO 20022) rather than implementing system-specific, proprietary standards.



This allows for easier and more cost-effective handling of transactions, such as remittances, across different systems.

Methods of accessing components of the system by participants or other parties should also be enabled through open application program interfaces (APIs). This enables innovation among direct and indirect participants; for example, providers and vendors can more easily embed payment capability in their sector-specific services.

Irrevocability: The system should not specially manage transaction reversal by the originating party nor specify situations in which the liability for a transaction is passed from one participant to another. This eliminates the complexity and services infrastructure required by the system to reverse transactions, thereby eliminating significant system cost. Note that this is only at the system level—direct or indirect participants could still offer value-added services that allow for reversals or other credits. Additionally, this does not mean that there should be no consumer protections: for example, the consumer should be able to make an inquiry into the status of a transaction, or lodge a complaint with their provider about an unauthorized transaction.

Shared fraud service: The system should address how participants may contribute transaction data (either on fraudulent or on all transactions) to a commonly owned fraud management service. Managing some of this functionality at the hub or network level, rather than at individual participant level, is likely to reduce costs of the overall service and improve fraud detection capabilities.

Tiered KYC: The system should enable tiered “know your customer” (KYC) that allows for participation by end users in correlation to level of use. For example, people lacking documentation may open basic accounts, and the risk related to these accounts may be managed by imposing strict maximum account balance and transfer limits. This will help

drive volume through participation by the poor, while maintaining proper levels of fraud control.

System Governance

Governance and rules by participants:

The system should be governed by its direct participants, as it is important that the parties with a vested interest in the success of the system have control of the system and/or the entity that contracts to manage operations and rules. Rules with respect to voting rights should be designed to protect the interests of indirect participants, whose interests should also benefit through affiliation and association with direct participants.

Governing documents (charters, by-laws and operating rules) should be designed to acknowledge the goal of creating and maintaining an effective, ultra-low-cost service for participants and end users. They should recognize the principle that basic use of the system (e.g., for interparty transfer) should be made available to end users either at no cost, or at a cost only sufficient to cover the incremental operating costs of the system. The propensity to extract profits from ownership of the basic shared digital financial system should be anticipated and restricted within the governing documents.

Participants may include providers within a country, but it may also be beneficial to consider whether a regional approach is appropriate. A larger, regional system may especially benefit smaller economies looking to reach greater economies of scale for low value transactions.

Collaborative-competitive spectrum:

Participants in this system should decide on the balance—and blend—of collaboration and competition. Participants are logically bound to collaborate on rules to which all agree to adhere, which creates a level playing field for all participants. In the Level One Project Guide, the same can be said for shared system components like the IST

and FRMS. The participants may decide to share additional components, such as a merchant or an agent management system, when the cost of replicating these components does not make economic sense. However participants might be more inclined to compete on the differentiation of services they provide, enabled by their digital wallet and account platforms. Furthermore, there is likely to be tremendous competitive advantage in delivering unique and niche applications that end users, agents, and merchants can use to add value to the system. These account and application components are what users will see and experience every day, stimulating innovation through competition that will accelerate the development of solutions that work for poor people.

Not-for-profit/cost recovery model: The system should be run on a not-for-profit or cost recovery basis. This should create a level playing field, enable participants to run profitable businesses characterized by a high volume of low-value payments, and keep costs from rising (or even reduce costs over time), all while serving the poor. Participants should pay fees (as determined by predetermined rules) sufficient to cover costs, as well as any investment or innovation capabilities deemed necessary to the system. Where a private-sector entity is commissioned to operate some shared component of the system, the profits of that entity should be subject to scrutiny and limits.

CONDITIONS NECESSARY FOR SUCCESS

Government Support

Successful implementation of a new digital payment system as outlined through the Level One Project Guide will require various kinds of governmental support.

Regulatory support for interoperability:

Care should be given by regulators to avert a situation in which market leading DFS providers create bilateral implementations that effectively exclude

new entrants. In some instances, a formal mandate may be required to incentivize banks and other financial organizations to abandon proprietary, closed-loop systems, or systems that enable only one type of provider (such as a bank) to participate directly.

Regulatory support of tiered KYC:

The tiered KYC approach needs to be embraced by regulators of both bank and digital financial services.

Regulatory support of persistent identity:

Fraud management requires both individuals and merchants to have their persistent identities recognized by the system. Although the system could establish this on its own or a commercial player could provide this, a national identity system may complement such efforts. The use of various technologies available to strengthen identity and authentication programs (such as biometrics and phone identification) is encouraged. In some situations, two- or three-factor authentication may be necessary.

Consumer and merchant education programs:

Government sponsorship of consumer and merchant education programs would help with service adoption, particularly by reassuring consumers and merchants about the safety of funds and transactions in the system. Further, this serves to reinforce appropriate and proportional consumer protection measures by ensuring that the market of providers and consumers understand how the system should work, and how to use it effectively.

Government use of the system: This is perhaps the most important element of government support. Many new payments systems suffer from the “chicken and egg” problem—needing bilateral adoption to get the system going. This can be difficult, especially if each adopter is waiting for the other to act. In the United States in the 1980s, when the ACH system was still in its infancy, the Treasury’s decision to pay Social Security benefits by ACH was

a critical factor in getting banks (and consumers) to adopt the new system. Federal, provincial/state, and local benefits and payroll programs can drive adoption by dispersing payments through the system, thereby both creating volumes (to drive down early costs) and putting the government’s imprimatur on the system, bolstering consumer confidence and its eventual adoption.

System Rules

In addition to system governance, there are system rules which create conditions necessary for success.

Security: The operating rules should prescribe minimum standards for end-user authentication and for the protection of data, to ensure ongoing confidence in the system. Leaving these choices to individual participants contributes to end-user confusion, and increases the vulnerability of the system as a whole to fraud.

‘System as a whole’: The operating rules should prescribe minimum standards for the system and its interdependent parts, including the coverage of mobile networks and the availability of the payments system. This is critical to achieve system usability, reliability, and consumer confidence.

Certification: The operating rules should provide for a testing and certification scheme to ensure that direct and indirect participants are meeting the technical, operating, and security requirements of the system. For example, the financial health of a potential direct participant and its willingness to contribute to the overall health of the payments system should be qualified.

Common terminology: The operating rules should define and encourage the use of common terminology for the payments services that are using the system. This is not meant to replace the primary brands created by providers, but to complement them. For example, “Use Fastpay (common term) with your

TelCoSuperWallet (proprietary brand).”

Consumer protection: The operating rules should outline measures to protect consumers and their interests. Note: Care should be taken in creating consumer protection that does not undermine core design principles of the Level One Project Guide (for example, requiring a merchant’s digital money service provider to compensate a consumer if a fraudulent service is provided, which conflicts with the core design principle of irrevocability).

Interchange: Although there are circumstances in which interchange may be an appropriate part of the economic model for a digital financial services system, the operating rules should ensure that it does not create distorted economic incentives that could inhibit adoption or undermine the use of the system. For example, interchange rules could be written to have a “sunset” period, rather than being put in place permanently. Likewise, interchange rules could be written to provide a period of time where interchange is set low to encourage uptake, adoption and use of the system, enabling markets to mature.

Agents: Rules should be written to maximize the utility of agents in the country, and ensure where possible that agents can serve customers, regardless of the provider that the customer has chosen. Agents that are shared across DFS providers, versus agents tied to one provider through an exclusivity agreement, are likely to be much more cost effective for providers, offer significantly more value to customers, and provide more income for agents. Where exclusivity agreements are already in place, it may be appropriate to provide some compensation (through interchange or some other mechanism) to the provider that owns this exclusive relationship. But these provisions should be short term. There may be instances in which a country or a region decides to operate a shared agent network, but on a not-for-profit or cost-recovery basis, in order to grow usage of the system.

User Requirements of the System

We expect that people of all income levels will use digital payment systems, but in developing this guide, we were focused in particular on the unbanked poor and their needs. These include a set of core use cases and requirements for individuals, as well as considerations for the merchants, enterprises, and governments that serve them through financial transactions.

INDIVIDUALS AND FAMILIES

Use Cases

Poor unbanked people borrow, lend, and save money using a wide variety of informal systems. They also transfer money to relatives and friends, and receive transfers from them; some of these transfers are to or from other countries. And, of course, they buy things—making payments to merchants, utilities, and other billers, and also to schools and community organizations. The financial lives of the poor are complex. But in building the Level One Project Guide, we distilled many permutations of financial exchanges down to a few priority use cases.

Users must be able to:

- Create and activate an account
- Deposit cash into the account
- Safely keep balances in the account

- Receive payments from government and business in the account
- Send payments (transfers) between individual account holders
- Make payments from individuals to merchants
- Make payments from individuals to pay bills (to schools, utilities, etc)
- Withdraw cash from individual accounts
- Connect to other financial services providers for different services (e.g., savings and borrowing programs, insurance and investment plans)

At the core of the Level One Project are the shared components upon which an open community can add to the initial set of use cases. By keeping this list deliberately short but sufficiently representative, we hope to make room for innovators who may come from anywhere to build and solve for particular problems and use cases that can be easily enabled on top of an open, standards-based system.

User Requirements

The project design principles further consider the way in which these use cases are delivered. These user requirements were deemed critical, especially in how they meet the needs of users who currently rely heavily on cash. The digital payment system must be:

Secure. People need to trust that the money held in a digital account is secure, and not subject to theft or unauthorized withdrawals. They need assurance that money will go only to the designated recipient, with a record of the transaction

that the individual can use to prove that payment has been made or received.

Affordable. Cost to use the system must be very low, both from the standpoint of holding money as well as transacting. To actually replace the use of cash for daily purchases, the cost to the consumer (as well as to the merchants serving lower income consumers) will need to be close to zero, as that is their perceived cost of using cash.

Convenient. The system needs to be easy to sign up for and use. Many poor people do not have the identity documents usually required to create financial accounts. This system needs to make some provision to enable these individuals to participate, while managing the related risks. The system has to be understood by prospective users with limited or no mediation. A very important aspect of this is the clarity and transparency of the system's conditions of use, including pricing and service rules.

Open. The system needs to be able to reach many (ideally all) counter parties for both making and receiving payments. It should not require special, costly, or time-delayed accommodations for a counter party using a different service provider. And it should make it easy for an individual to integrate into multiple financial systems of the country—people should not be excluded from the greater economy as a whole, or relegated to a financial system unconnected to that of higher-income earners.

Robust. A digital payment system needs to be available for use as needed, like cash. Users should not have to be

concerned about the system being down on payday, for example. As the number of participants (and their usage volume) grows, availability should remain high and be able to handle peak volumes without an interruption in service.

MERCHANTS, ENTERPRISES, AND GOVERNMENTS

Because merchants, enterprises, and governments provide services to the poor, a digital financial system must consider their needs, as well. The learning from digital money usage helped identify a number of merchant segments and their corresponding requirements.

Considerations for Small Merchants

Small merchants may operate very much as individuals do in terms of how they manage money, and may use either a consumer wallet service or a version customized in some way for small merchants. They do not use payments terminals, and they typically operate alone or in a family group. They are not likely to have a bank account, or, if they do, it may not be used for daily deposit of sales receipts. The following considerations for small merchants as

defined below should be added to the individual user requirements.

Secure: Merchants need to keep their payments receipts safe. Although it may seem obvious that digital receipt of payments would be more secure than cash for merchants, this may not be immediately apparent to small merchants, especially where the merchant needs to cash out receipts on a regular basis.

Affordable: Many small merchants will often consider the cost of using cash to be zero, and will compare any fee-based model to this. An important issue for some small merchants is potential tax exposure, since a small merchant receiving cash payment may avoid paying taxes on the transaction (if applicable) by either not reporting or under-reporting the income. Regulators must therefore consider this issue during implementation of this system.

Open: Merchants need to be able to receive payments from customers and make payments to suppliers using many different digital payment systems in the country. All of this should be accomplished without requiring merchants to have multiple accounts or devices.

Considerations for Large Merchants

Most large merchants and service providers that are defined in the categories listed below would not be considered poor, but may provide critical goods and services to lower income consumers and their families.

However, it is important that they be able to give and receive payments from lower income consumers, especially those who were previously unbanked. Large merchants have a handful of technical requirements in addition to those that they share with small merchants and individuals:

Advanced Devices and Methods of Payment: Large merchants may use stand-alone terminals, smart phones, tablets, laptop or desktop computers, or integrated acceptance devices. The system needs to function across multiple devices and hardware environments. The merchant may be receiving card payments, or other specialized local payment methods, such as vouchers or coupons. Receipts from a digital transaction will ideally be integrated with many different forms of payment acceptance.

SMALL MERCHANT SEGMENT DEFINITIONS

Individuals: Individual who receives payment for labor or goods

Single-Person Vendors: Regular vendor of goods or services, working alone

Small Shops: Owner or operator of small retail store

Small Farmers: Family or small group farm

Small Billers: e.g., local school, utility, medical provider, agricultural supply store

LARGE MERCHANT SEGMENT DEFINITIONS

Store: Single shop with multiple registers. Typically has dedicated feature phones with cash-out/spending controls, manual or low-end electronic cash registers (ECRs); may use smart phones.

Billers: e.g., schools, cooperatives, service providers. These use large IT systems and/or PCs for enterprise management, and may use biller service providers.

Utilities: Examples: airtime, electricity. Use larger IT systems and/or biller service providers.

Health Care: e.g., doctors, hospitals, clinics. Use dedicated feature phones, PCs, larger IT systems, and smart phones.

Large Stores; Travel and Entertainment: e.g., department stores, restaurants, hotels. Use more sophisticated ECRs, POS terminals, dedicated store phones.

Online Merchants: Online and mobile commerce. Use mobile phone, tablets, or PCs; may use an e-commerce platform or service provider.



Photo: Justin Mott

Multiple Users: There may be multiple accepters of payment (clerks), and single or multiple tills. Record keeping and deposit reconciliation requirements vary with these parameters. The system needs to allow for such variances.

Data: The merchant may be using some form of enterprise resource planning (ERP) system, whether on a laptop or a larger computer. Payment data needs to be integrated into this system.

Governments and Employers

Both governments and large private-sector employers need to use digital payment systems to pay benefits and salaries to individuals. Being able to easily reach digital payments subscribers is a way for employers and governments to reduce both the costs and risks—such

as fraud and corruption—associated with delivering these payments. Because of the number and volume of these payments, governments and employers represent a particularly attractive starting point for a new digital payment system.

Both governments and large employers use bigger, more sophisticated IT systems than the typical merchant. Their ability to create files to make payments, therefore, is not problematic—but there is a serious problem in how to identify the recipient, particularly for governments. Mapping mobile phone numbers or other identifiers, to “real” identities is necessary. This may be done by the paying agency or, on a more efficient basis, by the payment system itself. Tiered KYC policies can help governments and employers enroll payees in instances where additional

personally identified information cannot be confirmed immediately. The additional requirement of this group is the need to be certain about who is being paid on an ongoing basis. Accomplishing this requires work to establish persistent identifiers.

Governments also benefit when they can accept digital payments from individuals. The payment of fees such as a traffic ticket or parking fine enables a digital transaction to be created, which could reduce corruption and decrease the burden on the consumer by avoiding queues. The same can be said for the payment of taxes or usage fees for public utilities, school tuition, and health insurance. The core digital financial system components enable the government, both as payee and as payer.

Payment Systems: Lessons Learned

Payment systems operate in every country around the world. Both developed and developing economies have legacy systems that have often been in place for decades. These systems support personal, business, and government transactions, and are a mixture of paper and electronic, card and non-card-based systems.

Recently, newer payment systems are blossoming. These include new bank-centric, open-loop systems that all banks in a country can join, as well as private or closed-loop systems. Some are card-based, and many are mobile. Most use national currency, but some are based on virtual currencies.

While these systems, broadly speaking, are not inclusive with respect to the poor (who rely on cash for the bulk of their payments), they do provide a rich set of lessons essential for the development of the proposed inclusive digital payment system. In this section, we highlight both positive and cautionary lessons that were learned from legacy and emerging payments systems in order to draw out what is most relevant to a universal system that benefits all. Many of these touch on system qualities that drive out cost, increase access, or both. All are incorporated into the creation of the Level One Project Guide and its design principles. We also include case studies to illustrate a number of relevant practices.

A closed-loop system limits reach

Closed-loop systems hinder ubiquity of reach. Here, a provider develops

direct relationships with both the payer and the payee. Arguably, closed-loop systems may be easier to start, but cause the provider to have to compete across an end-to-end range of services, some of which may not be optimized. These systems are less useful to people and businesses in an inclusive digital financial economy than open-loop systems. Duplication of effort to incorporate into multiple systems can be costly, and these systems almost always have practices that make withdrawal of funds by non-members of the system impossible, slower and/or more expensive.

A cost recovery economic model drives affordability

Bank transfer systems operate on one of two economic models. A cost recovery model limits the functions done by the central system to core switching and settlement, and enables the participants to layer value-added services on top of the core activities. In most instances, these systems are run with the objective of minimizing costs to the participants. A value added network model adds functionality provided by the network itself, so the network's functions are then also available for use by participant banks. Not surprisingly, the transaction costs to participating banks of cost recovery models are significantly lower than in value added network models.

Participation in governance and rule-making creates fairness

System participants want a level playing field in which to operate. Their ability to provide input and feedback on the

rules, processes, and ongoing governance of a payment system is a proven and arguably necessary factor to ensure that participants feel they are being fairly treated within the system. Early involvement also spurs adoption and use by the prospective participants, whether that system is self-governed, or governed by a central bank or governmental organization.

New same-day or real-time settlement practices decrease risk

Given that underlying transactions are being delivered in near-real time, it is clearly optimal that the net settlement between participants relating to these transactions also be done either in near-real time, or at a minimum, on a same-day basis. In what we see as optimal implementations, the same-day settlement is done on a rolling basis throughout the day, with settlement requirements triggered at a predetermined threshold amount. Some systems are also requiring prefunding of settlement accounts, which then brings the group risk to zero for dealing with one member's failure. A settlement process that minimizes participant risk opens the door for new types of participants and innovators to be included—including those interested in serving the poor.

Real-time push payments provide convenience and better fraud control

On an individual transaction level, with near-universal Internet and/or cellular connections in many parts of

the world, it is possible to design a push payments system that moves payment orders through in near-real time. The authentication of the payer happens immediately with the party that knows the payer best, reducing the potential for fraud and the embedded costs related to managing this risk. The result is that push payments have less risk and are less expensive for providers.

International standards and open APIs lower the costs of innovation and access

In recent years, it has become obvious that the use of international standards (such as ISO 20022) is better than system-specific, proprietary standards, as it allows for easier handling of transactions being passed out of the domestic system and into international systems. It also makes the handling of the transaction in participant and end-user systems more cost efficient, as many of these systems are built to work with international standards.

On top of established standards, newer systems are exposing system functionality via APIs to direct participants and other service providers. This enables multiple providers and vendors to easily embed payment capability in their sector-specific services. The use of open APIs encourages innovation, particularly by secondary service providers, and drives down total system costs and/or increases functionality.

Allowing value to be stored and transferred by non-banks provides benefits

Legacy payments systems normally allow only banks (or depository financial institutions within a country) to participate directly in the system. Three developments are challenging this framework. First, in some countries, non-bank service providers of various types are given direct access to core transfer networks. This is done with a

variety of restrictions on the types of participants and the requirements (such as capital and size) to do so. Secondly, new payment systems, including prepaid card systems and digital money systems, are holding and transferring value within and among non-banks. Finally, an increasing number of consumers are provided with payments services through relationships with non-banks. Often, these non-bank providers can access consumer populations that branch banking cannot or doesn't reach. An increasing sophistication of thought among regulators seems to be leading to the conclusion that allowing non-banks as direct participants in payments systems may promote competition and innovation, leading to better and lower-cost services for consumers and businesses.

Best practices and lessons for fraud control effectiveness

Persistent identifiers: The use of a persistent identifier for end users (both individuals and enterprises) is important for fraud control. This identifier is used after the account opening and KYC process. Several emerging practices and technologies, such as biometric identification, hold promise of better and lower-cost authentication, which can drive down fraud rates and the cost to manage fraud.

The use of shared data: No fraud detection system based on data from a single system participant can come close to the effectiveness of one that uses data from all participants. A database of all transactions (good and bad) can strengthen the ability of anomaly-detection algorithms to recognize fraud or potential fraud.

Centralized security provisions: In legacy card systems, increasingly sophisticated fraudsters have successfully breached security protocols to access large stores of consumer payments data, which is then used in a variety of fraud schemes. This is in part due to a failure

by card networks to immediately specify system-wide security requirements (for example, transaction encryption). Instead, end points, such as merchants and their processors, were allowed to determine their own security protocols, exposing the system to a greater risk of fraud.

Great care needs to be used in implementing interchange economics

In some bank transfer systems, system rules require one bank in a transaction to compensate the other bank—this is referred to as interchange. In theory, interchange is a mechanism used to balance costs among participants in the system. It is a powerful tool, and has been effectively used to ramp up system growth when the economic benefits of one side of the transaction are relatively unattractive. But interchange also can distort payment economics, particularly if the balance of power between the two sides of the transaction is uneven. Great care needs to be used in implementing interchange policies for new payments systems, to ensure that these policies do not result in higher end-user prices and increased barriers to entry, especially among the poor.

Proprietary merchant connections drive up prices

In developed countries, there are a wide range of merchant services providers who create software and systems specific to a merchant segment. These systems can be thought of as merchant business systems, or vertical-customized ERPs. Whether running on a mainframe or on a mobile phone, they are customized to the business requirements of the type of merchant or enterprise using them. Often, these systems have payments capability embedded in them. Though these systems are valuable to the merchant customers, they often use proprietary technology, contributing to vendor “lock-in” and undesirably higher overall prices to merchants.



Embedded revocability rules drive up prices

In credit card systems, and, to a lesser extent, some debit card systems, consumer rights and recourse are embedded in the rules of the card network. For example, a rule might state that if a service was not delivered, a buyer could get their money back from their bank, which in turn would pass the loss on to the merchant's bank.

Consumer recourse provisions require the payments system and its participants to set up elaborate—and inevitably costly—processes and systems for the administration of the rules. In particular, rules that transfer transaction liability from a consumer bank to a merchant bank result in the merchant bank accepting liability for its customer. The cost of this liability ends up being priced into the merchant service fee, resulting in higher costs for consumers.

Tiered KYC can dramatically increase access and financial inclusion

Several countries have enabled tiered KYC as a means of encouraging participation by the non-banked in the financial systems of the country. With an eye toward providing financial services to the poor, it is particularly attractive to have “micro-tiers” that enable those people lacking documentation to open basic accounts and manage the risk

related to these accounts by imposing strict maximum account balance and transfer limits. Systems that use tiered KYC (and are enabled by tiered KYC regulatory policies) are able to deliver more usefulness to their users, who can thus reach more individuals to pay or be paid by.

CICO drives up costs

The current practice of cash-in-cash-out (CICO) transactions by many users of digital money services has a high cost. In this system, digital money agents and agent network providers have to transport cash to and from agents. Another significant cost is that merchants in digital money systems today are incentivized to provide cash out (rather than digital money in) because they receive a commission for this activity. In fact, agent CICO commissions consume 40–80% of mobile money revenues. One company has even reported that commissions to agents are now its single greatest direct cost. And when merchants run out of available cash on hand, users become frustrated because there are not enough options for spending digital money. This drives up the overall costs of digital money and lowers consumer satisfaction and adoption.

That being said, it is clear that CICO is a necessary function to support a digital money ecosystem—up until the time that digital liquidity is achieved.

Crypto-currencies present some interesting new concepts

Bitcoin and many other virtual “crypto-currencies” continue to draw attention from investors, solution providers, end users, and regulators. While there are obvious risks with the introduction of any new technology, there are also key aspects of these crypto-currencies that may contribute to solutions that serve the poor.

As a currency. If implemented with structural issuance limits (as is the case with Bitcoin) a crypto-currency could provide protection against inflation and loss of value to users of the system—a significant benefit in countries with fragile or inflation-prone currencies

As a domestic payments mechanism. A crypto-currency could create a means of holding value, making payments, and transferring money without financial intermediaries (or arguably, with a new, structurally different class of financial intermediaries). In theory, these services could then be used at no cost, or near-zero cost, with no need to compensate traditional intermediaries for proving service.

As a cross-border payments mechanism. A crypto-currency might significantly lower the cost of transactions for consumers, particularly if a robust network of exchanges and wallet providers evolves to provide consumers with the ability to easily convert the virtual currency into and out of “home” (fiat) currencies at either end of the transfer.

As a digital transport system. The block chain—the distributed ledger technology that underlies Bitcoin and other crypto-currencies—can be used to move digital assets of all kinds, including fiat currencies. This could be used as an alternative to current transaction switching and settlement models. In theory, it could also be used to lower the costs of providing these functions.

1. GSMA Mobile Money for the Unbanked: Mobile money profitability: A digital ecosystem to drive healthy margins, Nov 2014.

The U.K.'s Faster Payments System

Immediate Push Transfers

As an advanced economy, the U.K. has had a retail payments system called Bacs since 1968, featuring both credits and debits. Dissatisfied with the perceived slow speed of the system (3+ days for payments to complete), consumers and businesses voiced concern, and ultimately, public authorities told the banks to create a better solution. Bankers initially evaluated retrofitting the Bacs systems with additional settlement cycles, but later discarded that option in favor of creating a new, near-real-time system that would meet the payment system's needs for a longer period into the future.

The resulting system, launched in 2008, is known as Faster Payments. It offers speed of funds delivery as well as 24-hour a day operation. Faster Payments manages these obligations between banks by processing the payment messages almost instantly—allowing the sender and receiver to know the payment is completed, and then performing the payments settlement in groups or batches throughout the day. Almost every bank in the country is now connected to Faster Payments, making it ubiquitous.

One of the remarkable aspects of the U.K. experience is how banks came together and agreed on a vision for modernizing the payments system.

In spring 2014, building on the Faster Payments foundation, bank customers in the U.K. became able to send payments to others without having to know full account number details. Payments can now be addressed using only the receiver's mobile number.

The Faster Payments system matches many of the elements of the Level One Project Guide—immediate funds transfer, push payments, same-day settlement, ownership and rules by participants, an open-loop participation

model, a cost recovery economic model, and support of persistent identity.

The Canadian Interac System

Delivering Low-Cost Transactions Using Network Capability

A network of ATM and point-of-sale devices in Canada, Interac is a provider of debit card services for banks and regulated financial institutions. By providing real-time access to bank account information, Interac positions itself as a low-cost alternative to making a purchase with a credit card. The merchant gets an assurance in real time that the consumer has the funds to make the purchase. In this way, accepting a payment from an Interac debit card is like accepting virtual cash that is credited to a merchant's bank account on the next business day. The consumer, in turn, contributes to lowering the merchant's payments acceptance costs, and expects this to translate into lower costs for them over time.

So how much does an Interac transaction cost? Interac members pay a tiny per-transaction fee (US\$0.0064) that translates into an average cost to the merchant of around 12 cents. Merchant fees are roughly determined by the number of transactions and the merchant's overall relationship with the bank or merchant acquiring company that provides POS devices and data services. A study by the Bank of Canada found that merchants pay substantially lower fees to accept Interac debit cards compared to credit cards, with fees to merchants ranging from \$1.75 to \$2.50.

The Interac system is illustrative of a cost recovery economic model that offers low-cost services and a national open-loop system. It furthermore illustrates the value of having a national approach committed to bringing low cost services to end customers (merchants and consumers), rather than emphasizing revenue opportunities to providers.

Payments in Colombia

National Mandate to Increase Financial Inclusion

As part of its efforts to promote financial inclusion, the Colombian minister of finance announced the creation of a new banking license for entities that will be focused on payments, savings and deposits. The PADs (from the Spanish name) would require a minimal amount of capital compared to a traditional banking license, and would have to be technically specialized toward providing transactional services. PADs would be supervised, hold funds on balance and carry deposit insurance. Given these features, the PADs are expected to provide better services to the unbanked population.

Peru's Emerging Mobile Payments Systems

Driving Financial Inclusion via Mobile Payments

Faced with many population disparities and the overall need to increase financial inclusion in the country, Peru has made a concerted choice to put mobile first. Officials there have created a sound legal foundation for e-money that will facilitate business for bank and non-bank providers that want to offer digital payments. In fact, the Peruvian government created the new category of an e-money provider specifically so that non-bank entities could access the payment system there.

Peruvian authorities also realized that to create a digital payments ecosystem where people, merchants, and institutions like schools and clinics could transact payments with confidence, they needed a payments system that operated in digital time. Soon, Peruvians will be able to send credit payments from their mobile phones in real time.

Another interesting step that Peru has taken is to exempt the creation of e-money from sales taxes for a period

of three years, while still leaving in place a tax on financial transactions of 0.005 percent. While taxing financial transactions is controversial, as it disincentivizes people from making electronic transfers and encourages the use of cash, Peruvian lawmakers took an important step in encouraging the use of mobile by providing the sales tax exemption.

The Peruvian model includes key elements of the Level One Project: enabling interoperability via a mobile payments switch, an open-loop model, and providing immediate funds transfers.

India's Aadhaar Program

A National Biometric Identity System

Aadhaar is a biometric identification system introduced by the government of India in 2012 to aid its population in opening bank accounts and receiving government benefits. The Aadhaar program comprises a centralized identity database, linked to basic demographics and biometric information including a fingerprint, iris scan, and facial photo. It is operated by the Unique Identification Authority of India (UIDAI).

The creation of the Aadhaar program was driven by the fact that more than 80 percent of people in India did not hold identity documents to satisfy the minimum KYC criteria for a banking relationship. Government programs to distribute benefits to residents were also challenged by logistics and corruption.

The program is optional, but the goal is to assign an Aadhaar card to all residents for lifetime use. As of April 2014, approximately 51 percent of the population holds an Aadhaar card. It has become the primary key linking databases for e-governance. It is valid all over India as a proof of identity, age, and address, although it is not a proof of citizenship. The Central Bank of India plans to have Aadhaar-linked bank accounts for all adults of India by

January 2016, and to extend the program to business IDs as well.

A basic Aadhaar-enabled bank account is a zero balance savings account, including a debit card, with the person's Aadhaar number as the account number. Transactions operate with fingerprint authentication only, as indicated by the Aadhaar logo on the card.

Mexico's SPEI System

Making the Formal Banking System Work for Financial Inclusion

Mexico was a pioneer in opening up its real-time payment system, normally reserved for high value business payments, to payments of any value. This means that Mexicans can send money to businesses or to another person in just a few seconds. To foster competition among providers, Mexico also opened up the payment system to non-bank participants that want to process payments. This system, known to Mexicans by its Spanish language acronym SPEI, has now been in place for nearly a decade.

A pioneering initiative by Mexico to promote financial inclusion was the introduction of tiered levels of KYC requirements. These categorize bank accounts according to several factors, such as the amounts that can be transacted within a given month, the maximum balance, and the level of features. For example, a basic account only allows the owner to maintain small deposits and cannot be connected to a mobile phone account. At the same time, the basic account doesn't require the owner to provide any formal documentation.

Mexico illustrates several important aspects of the Level One Project: low-cost immediate funds transfers, inclusion of non-banks in the payment system, and tiered KYC.

Payments in the Southern African Development Community

Regional Payments Initiative Drives National Improvements

The Southern African Development Community (SADC) is an intergovernmental body representing Angola, Botswana, the Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe. It is charged with a broad, ambitious agenda, including updating and aligning the 15 domestic payment systems for future growth, and to facilitate growing intra-regional trade.

Building on top of the new real-time gross settlement (RTGS) systems in most countries, central bank governors in the SADC agreed to deploy the additional infrastructures needed to easily exchange retail payments across borders. The new capabilities include a regional interbank settlement system and a regional clearing capability for electronic funds transfer (EFT) credits and debits.

This was no small accomplishment. To create these systems, the SADC member countries had to reach agreement on the technical standards for exchanging payments, and agree on the system's rules. It was a difficult task, but one that was accomplished in just a few short years.

The SADC accomplishments demonstrate the power of multi-country collaborations to create effective payments solutions at significant scale, even for smaller national economies. These payment solutions not only improve domestic opportunities in member countries, but also build on top of that to promote regional growth and prosperity.

Conclusions

A well designed, inclusive digital financial services system can eliminate the barriers that prevent the poorest in the world from having access to the tools to help manage their financial lives. This paper outlined the Level One Project Guide—a unifying framework for how a country might approach designing an inclusive digital financial system. And while a sound strategy for an inclusive digital economy takes more than digital technology, a key enabler is a core infrastructure that enables market participants and government and private sector players to connect to each other and reach the poorest citizens with ultra-low-cost digital payments. We believe an inclusive DFS system also benefits governments and industry players. Governments achieve economic and social connection of their citizens, reducing corruption, harnessing GDP that is left on the table (or stuffed in a sachet under a mattress) that will generate new jobs, and providing greater control and visibility of the whole financial system. From this, even the poorest citizens can become vital contributors to economic development by mobilizing domestic capital through new savings accounts, creating opportunities for households to access affordable credit, or even just by protecting themselves from financial risks. Banks and other financial institutions have contributed a great deal by bringing the upper and middle classes into the financial system, creating trillions of dollars in new economic value. Bringing in the rest of the world can do the same, country by country. Moreover, digital economies drive the creation of new opportunities for businesses and business models,



Photo: Prashant Panjari

spurring innovation like those that have revolutionized retail, publishing, music and, increasingly, services.

But to unlock this potential, governments and industry players must take collective action to design and implement a system that can create and promote inclusion. The Level One Project Guide aspires to provide leaders and champions with the key ingredients for creating a movement at the country level that draws upon all of a country's assets, to fulfill the aspiration of a truly inclusive digital payment system.

It is necessary, however—perhaps even imperative—for a country to take a proactive approach to controlling the development of digital payment systems.

Without this leadership and a unified vision and control, the unrestrained development of markets risks creating a payments ecosystem that is too fragmented to be useful, and too costly to be sustainable—or usable—by the poor.

The Gates Foundation recognizes that the pathway to a unifying inclusive digital financial system will vary from country to country, and that the policies and structures advocated here are not easy to accomplish. But incorporating these elements into a larger country digital financial services strategy can help those individuals and families who are caught in poverty today to reach their full potential. And in doing so, help to create an economy that benefits everyone.

Appendix: Key Components of the Level One Guide

The Digital Payments System Organization

The Digital Payments System Organization is a governing entity that manages the system on behalf of the participant owners. It is responsible for providing the IST and FRMS components, and for writing the system rules.

The Interoperability Service for Transfers (IST)

The IST provides a switch that passes payments messages from one participating DFS provider to another. The IST interfaces with a settlement function that handles net settlement among participants on a rolling, same-day basis. The settlement function may be provided by the IST or by another party, such as the Central Bank of the country. The IST also operates a directory that recognizes telephone numbers (and probably national ID numbers) as “belonging” to a given DFS provider participant, allowing the switch to operate and reach all participants.

The IST switching function has been operated successfully as a commercial shared service model, as an industry-owned shared service, and as a government utility. Countries have even successfully shift from one model to another. Moreover, although the Level One Project Guide depicts a single switch, it is possible in some countries that a distributed network of switches would do a better job of providing functionality at low cost. It is also possible to imagine that some transactions are being moved from

party to party through block-chain technologies, without a switch being used. In any case, it is important that all transactions are covered under a common set of system rules, regardless of the architecture of the switch.

The Fraud and Risk Management Service (FRMS)

The FRMS is a collaborative fraud control system. For the purposes of this guide, we assume that the participants in the system have agreed on the need for shared, rather than distributed (i.e., at each participant) fraud monitoring capabilities. This is a design choice, however, and some countries may elect not to do this.

The operating rules of such a system will require participating DFS providers to contribute data about fraudulent accounts and transactions (and possibly about non-fraudulent accounts and transactions as well). This will populate an FRMS database, which will be used by participating DFS providers to screen new account applicants and individual transactions. The FRMS will also develop a series of services, including fraud detection algorithms and scoring, that DFS providers can use to identify patterns of fraud and fraudulent actors. Use of the FRMS will help participants manage KYC and Financial Action Task Force (FATF) compliance, as well.

Note that in some countries, the same vendor may supply both the operating capabilities of the IST and/or the FRMS, and the digital money platforms that participants use to offer services to their end-parties. These capabilities are

distinct, however, and great care should be exercised to avoid undesirable vendor “lock-in”. The Level One Project Guide includes functional components that will exist at participating DFS providers, and that will interact directly with the IST and the FRMS. These components are managed by the DFS providers (and their vendors), but could be shared as well in conjunction with the IST and the FRMS.

These components include:

Account Opening Services (AOS): AOS is part of the digital money platforms operated by DFS providers. The AOS interacts with the FRMS to screen for fraudulent account applications.

Consumer and Agent Management Services: These are important digital service capabilities, most commonly offered by the DFS provider. These services track the balances in individual accounts, and submit transactions to the IST for switching.

Merchant Account Management: A merchant account management service is a specialized type of account management system that supports the needs of merchants larger than individual vendors. Only some participating DFS providers would have a need for merchant account management services.

Appendix: About the Gates Foundation's Financial Services for the Poor Program

Our Goal: To help people in the world's poorest regions improve their lives and build sustainable futures by connecting them with digitally-based financial tools and services, in order to create an economy that includes everyone—and in which everyone benefits.

AT A GLANCE

More than 2.5 billion adults do not have a bank account or use other formal financial services—not only because of the challenges of living in poverty, but also due to costs, travel distance, and other barriers.

Access to formal financial services can help people protect their earnings, weather personal financial crises, send and receive payments, and better manage their farms and small businesses.

Our strategy aims to capitalize on rapid advances in mobile communications and digital payment systems to expand the availability of affordable and reliable financial tools that can serve the needs of the poorest.

Our Financial Services for the Poor strategy is led by Rodger Voorhies, director, and is part of the foundation's Global Development Division.

THE CHALLENGE

We currently live in a world where access to and use of financial services—digital and otherwise—is not universal. More

than 2.5 billion people—most living on less than \$2 a day—lack access to a formal account at a financial institution. Just 41 percent of adults in developing economies have an account, and that number drops to just 20 percent among adults in extreme poverty. Women in particular have been excluded from the financial system—in developing countries, just 37 percent of women have accounts, compared to 46 percent of men. And in missing out on the many advantages that these financial systems offer, many become stuck in a never-ending cycle of poverty.

It's true that millions of people transition out of poverty for a diverse array of reasons every year—adopting new farming technologies, investing in new business opportunities, or finding new jobs. But at the same time, large numbers of people fall back into poverty due to health problems, financial setbacks, and other shocks. Effective financial tools—to save, send money, borrow, and manage risk—can help people weather these setbacks and achieve greater financial stability over the long term.

This happens because most poor households operate almost entirely in the cash economy, particularly in the developing world. This means they use cash, physical assets (such as jewelry and livestock), or informal providers (such as money lenders and payment couriers) to meet their financial needs, from receiving wages to saving money. However, these informal mechanisms can be insecure, expensive, and complicated to use. And they offer limited recourse when a major problem arises, such as a serious illness in the

family or a poor harvest.

And while many parties are already involved in providing financial services to the non-banked poor, what is lacking is a shared digital financial system that brings these groups together—both public and private sector—in order to provide services that benefit everyone in their country.

THE OPPORTUNITY

A growing body of evidence suggests that increasing access to formal financial tools can help poor people hold on to economic gains and build more stable futures. However, it is costly to serve poor people with financial services, in part because most of their transactions are low in value and conducted in cash. Storing, transporting, and processing cash is expensive for banks, insurance and utility companies, and other institutions—and they pass along those costs to customers.

In wealthier countries, people conduct most of their financial activities in digital form, storing value virtually and transferring instantaneously. And this global revolution in mobile communications, along with rapid advances in digital payment systems, is creating opportunities to connect poor households to affordable and reliable financial tools through mobile phones, kiosks, and other digital interfaces.

In fact, research has shown that the most effective way to significantly expand poor people's access to formal financial services is through digital means—not only by reducing costs, but by benefiting all parties involved. The benefits of the

Level One Project Guide to inclusive digital financial services:

For governments, such a system can utilize existing innovations and infrastructure to bring their entire country into a digital financial system that is efficient, effective, and beneficial to all.

For NGOs and other such organizations, such a system can provide services and opportunities to a population historically excluded from existing financial systems, and drive sustainable progress toward goals in health, agriculture, education, gender equality and more.

For the private sector, such a system enables them to tap into an entirely new customer base by connecting poor people to the formal financial sector and enabling them to become customers and suppliers within the wider economy.

And for the billions brought into the shared digital economy, such a system can reduce corruption and theft, speed up transactions and utilize direct deposits to bypass the home, helping users save, rather than spend—something that often gives women more financial authority within the family.

THE GATES FOUNDATION STRATEGY

The Bill & Melinda Gates Foundation's Financial Services for the Poor Program aims to play a catalytic role in broadening the reach of digital payment systems, particularly in poor and rural areas, and expanding the range of services available on these platforms. Until the infrastructure and customer base are well established, this might involve a combination of mobile banking services that are accessible on digital devices, and brick-and-mortar facilities where subscribers can convert the cash they earn into digital money (and vice versa).

Our approach has three mutually reinforcing objectives:

Reducing the amount of time and money that poor people must spend to conduct financial transactions

Increasing their capacity to weather financial shocks and capture income-generating opportunities

Creating economy-wide efficiencies by digitally connecting large numbers of poor and low-income people to one another, financial services providers, government services, and businesses

We are not focused on a particular product or distribution channel, but rather on finding innovative ways to expand access and encourage markets. At the same time, we are aware that interventions in this and other areas too often involve technologies that are made available to the intended users, but are then not adopted. To address this demand-side challenge, we are supporting research and product design experiments to identify design features, price incentives, and marketing messages that will encourage poor people to adopt and actively use digital financial services. We are also supporting policy makers as they work to develop policies and regulations that facilitate these developments and provide oversight and accountability.

We believe that the combined effect of these interventions will accelerate the transition of people out of poverty and help build their financial security. Our strategy also recognizes that countries are at different stages in developing an inclusive digital financial system, and that any solutions must be appropriate for the cultural and economic context.

Appendix: Glossary

Adjacencies: Ways in which businesses, banks or other financial services providers realize revenue from services that are not directly associated with payments—for example, loans made to payments account holders.

Agent: An authorized person or entity that handles financial account opening and/or transactions on behalf of another entity. The other entity may be a bank or, in some countries, a non-bank provider of digital financial services. Cash-in, cash-out (CICO) is a common service provided by agents.

Authentication: The mechanism whereby systems may securely identify their users. Authentication systems provide answers to the questions: Who is the user? Is the user really who he/she represents themselves to be? In payments systems, signatures and PINs are common methods of authentication.

Authorization: The permission given by the paying person or entity to make the payment. In a push payment, the paying person authorizes their bank or financial service provider to make a payment. In a pull payment (such as a card payment), the paying person's bank or financial service provider answers the payee's question: "Is the payer authorized to make this payment?" Note that authorization means a good funds guaranty in some systems (such as card systems), but not in others (such as direct debits).

Automated Clearing House (ACH): Electronic bank transfer systems which operate in most countries. ACH's handle either or both credit push or debit pull (also called direct debit) payments.

ACHs operate by having most banks in the country belong to the ACH: either directly or through intermediary banks. The ACH switch moves transactions from one bank to another, and either provides for, or interfaces with, a net settlement system.

Bank Transfer Systems: Open-loop payment systems used by banks in a country. Checking, ACH, wire transfer, and some card systems are all bank transfer systems. In some countries, these systems are being opened up to non-bank participants.

Batch Processing: An approach through which transactions are held together in a batch and then processed at the same time. In financial services, transactions may be batched together and processed at different intervals, e.g., every few hours, or at the end of the day. Batch processing contrasts to real time processing.

Block Chain: A protocol used with math-based currencies such as Bitcoin: a publicly available transaction ledger that serves the purposes of recording and validating virtual currency transactions.

Clearing: The process in payments systems in which the paying bank or financial services provider posts individual transactions to their customer accounts. Clearing may be done in batch or real time. Often referred to in conjunction with settlement.

Clearing House: An organization formed to handle payments in an open loop bank transfer system. A clearing house may handle transaction switching, or facilitate clearing and interbank settlement. The term is most typically

used for check or ACH systems.

Closed Loop: A payment system with limited participation by banks or financial services providers. Most closed-loop systems have only one provider, who has a direct relationship with both the payer and the payee. Closed loop contrasts with open loop.

Cost Utility Model: A business model often used in payments systems, where the participants in the system agree that the entity or entities providing central switching and settlement services operate on a cost recovery, rather than a for-profit, basis. Many checking, ACH, and some debit card networks operate on this basis.

Digital: Electronic communications between two parties that can occur on various devices (e.g., mobile, tablet, or computer).

Direct Digital Financial Services Providers (DFS providers): A term used in this paper to describe a financial services provider that is a participant in the digital financial services system. DFS providers have relationships with consumers, merchants and other enterprises, and provide digital financial services to these end-parties. DFS providers operate their own digital financial services platforms.

Digital Liquidity: A practice of keeping value in digital form, rather than exchanging the digital value for cash.

Fiat Currencies: Currencies issued by the central bank of a country.

Financial Service Provider: An entity providing a financial account and

transaction services to end-parties.

Gross Settlement: The process used by high-value bank transfer systems to settle obligations among participants. Each transaction is debited or credited to an account, typically at the central bank of the country. Referred to as real time gross settlement (RTGS). Gross settlement contrasts to net settlement.

Immediate Funds Transfer (IFT): A payment system in which the processing and clearing of transactions occurs in real time. IFT transactions are usually push transactions. Participant or interbank settlement may occur at the same time (as in an RTGS system) or later, on a net basis.

Interchange: The compensation practice in some open-loop payment systems. System rules require one bank in a transaction to compensate the other bank for handling the transaction.

Interoperability: The ability of an end-user dealing with one bank or financial services provider to exchange a transaction with an end-user who is dealing with a different bank or financial services provider. Interoperability may be achieved either through participants all using the same system, or through inter-system networking agreements.

Know Your Customer (KYC): Regulatory requirements for banks or financial services providers to establish the identity of a customer or entity before opening a financial account.

Math-based Currencies: Virtual currencies which use public key cryptography and block-chain technologies. Bitcoin is an example of a math-based currency.

Merchant: Generally used in the payments industry to describe receivers of funds, where payments are made for goods and services. Such recipients are a broad group, and include stores, service providers (often referred to as billers), not-for-profit enterprises and governments.

Mobile Money Services Provider: A category of financial services providers using mobile phones as the access method for end-parties.

Net Settlement: The process in an open loop bank transfer system in which the obligations of one bank to another are fulfilled. A settlement process requires an entity (the settlement agent) to compute on an ongoing basis the net position of the participants in the system. At the end of the settlement period, the agent calculates the net position and advises participants of their need to fund, or ability to draw from, a settlement account they hold at a common institution.

Application Program Interface (API): An API that provides a developer with programmatic access to a software application or system. Open APIs are published (often on the Internet) and typically shared freely.

Open Loop: A payments network that is open to all participants in given categories — most typically, all banks in a country. Some country open loop systems allow non-bank participants to belong directly to the system. Open loop contrasts with closed loop.

Participants: Entities which join a payments system. Participants provide financial services to end-users. Most typically, these participants are banks, but this is changing. Some countries have an already-existing system that opens membership to non-banks. New systems in development may allow participation by banks and non-banks. Participants are bound to follow system rules.

Pull: A type of payment transaction originated by the payee's bank or financial service provider, who requests payment from the payee through the system. ACH direct debits, checks, and card payments are all pull payments. Pull payments can bounce for insufficient funds unless a separate authorization transaction is done (as with cards).

Push: A type of payment transaction initiated by the paying person or entity's bank or financial service provider, who sends a message to the payee's bank or financial service provider. Sometimes called credit transactions.

Real Time: Processing of transactions as they are initiated, rather than processing in a batch.

Reconciliation of Funds: All digital funds received, regardless of the payer, should be deposited into the same transaction account.

Recourse: The rules in certain open-loop systems that allow one participant to have recourse to another in certain situations: for example, a "charge-back" in a card transaction.

Remittances: Payment from one consumer to another, either domestically or cross-border.

Indirect Providers: Users of a digital financial services system who are not direct participants in the system. Indirect providers access the system through relationships with direct participants. For example, an indirect provider will not connect directly to the IST, except as a partner of a participating DFS providers. Similarly, an indirect participant will not directly participate in system settlement and instead will rely on their DFS providers to handle a private financial settlement with them.

Switch: A processing entity in a payments system that routes a transaction from one participant to another. A system may operate its own switch, or this function may be done by one or more third parties.

Value-Added Network Model: A business model used in some payments systems, in which the central hub operates on a for-profit basis. Credit card and some debit card networks operate on this basis.

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