M-Arca: A Last Mile Solution For the Informal Economy

Lawrence McDaniel, Interim Executive Director
M-Arca Foundation

lawrence@m-arca.org
+52 1 (55) 4388-3070
+1 (415) 766-9012

"The Arca is the AppleTV of financial services and frontline healthcare delivery for underserved consumers."

Abstract

The M-Arca Foundation (MAF) is a non-profit organization with a global focus on financial inclusion and improved frontline healthcare service delivery for 3.5 billion underserved consumers around the world. **Our mission is to provide a true "last mile" solution for underserved "Informal Economy" consumers in both rural and urban communities.**

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About MAF

MAF sponsors open source software projects and digital trust data models that form the foundation of a platform that is open to private sector service providers in the financial services and healthcare industries, providing them with direct access to a vast global market of underserved customers. Our projects are created and supported entirely by our community of volunteer contributors.

Services offered on the M-Arca platform range from international wire transfers, peer-to-peer payments and cash lending services, and more than 30 clinical healthcare services including tests for Pregnancy, HIV, Hepatitis B, Malaria, Dengue, Routine Blood Grouping, Haemoglobin, Body Temperature, Urine Analysis, Rheumatoid Factors, and Pulse Oximetry.

MAF accomplishes its mission entirely through the efforts of unpaid volunteers, whom we refer to as "contributors". MAF contributors include software engineers, business analysts, data scientists, project managers, testers, academics, economists, public policy experts, legal professionals, technical writers and editors, and myriad others. MAF contributor backgrounds range from students and professors to practicing attorneys, bank employees and NGO staffers. MAF openly collaborates with private and academic research teams, bartering our operational Arca data for the rights to make commercial use of original research that the research teams produce in future. We also actively seek out corporate sponsorships and strategic alliances with technology incubators, investment funds, NGO's and any other organization that we believe can help us to achieve our mission.

MAF closely follows the organizational structure of the Apache Software Foundation (ASF), the owner of Apache Web Server, an open source software project that incidentally is also the world's most successful web server software. MAF shares striking similarities in mission statement as well as the scope and technical complexity of the technology required for ASF to achieve its mission. Like ASF, MAF is governed by an entirely independent board of directors, and MAF is substantially composed of a collection of highly autonomous projects, each with a dedicated Project Management Committee (PMC).

Executive Summary

When rural and/or low-income consumers (the "Informal Economy") have access to financial services and the confidence that those services are working in their best interest, those individuals can independently improve their lives. At the same time, one of the single best means of immediately improving the wellbeing of rural Informal Economy consumers is to provide them with convenient, cost-effective access to healthcare services such as basic clinical tests and prescription drug delivery. These two seemingly unrelated goals in fact share multiple common causalities, which we hope to decisively resolve on a global scale.

Traditional financial and healthcare services consume a larger percentage of informal economy workers' incomes than those of the formal economy, in part due to the extraordinary travel time and costs involved in traveling to the nearest service providers' locations. Picking up a specially

ordered prescription drug, going to a clinical laboratory for a urine test, or completing a simple bank transaction can routinely require as much as an entire day of travel for some rural dwellers due to transit times and wait queues. The traditional branch, franchise and online models typically used to deliver certain financial and frontline healthcare services to urban middle-income customers were simply never intended to descale to rural low-income communities with say, less than a thousand inhabitants. Branch locations need many paying customers to offset substantial fixed operating costs. Meanwhile, private sector management teams have a fiduciary responsibility to their shareholders to operate branches in only profitable locations. It serves the interests of no one to vilify the private sector for their unwillingness to expand into likely unprofitable markets. But at the same time, the status quo has left billions underserved.

MAF was formed to reconcile fundamental incompatibilities between the Informal Economy and sophisticated urban financial and healthcare service providers (the "Formal Economy"), by addressing four fundamental pain points:

1. *The consumer is "off grid"*
    a. *No bank account*
    b. *No means of establishing traditional credit history*
2. *Amounts involved in consumers' transactions represent a substantial percentage of "normal" transaction costs & fees*
3. *Travel distance from customer location to service provider is significant*
4. *Consumer is outside of landline and cellular coverage areas.*

To be sure, many commercial upstarts and NGO's in increasing numbers are committed to providing better and more affordable alternatives for both financial services and frontline healthcare. From instant cryptocurrency money transfer services to cloud-based medical testing services, there are a steadily increasing number of ingenious and potentially disruptive innovations coming to market by ever smaller entrepreneurial ventures. **M-Arca provides the infrastructure that these companies need to extend "the last mile" to Informal Economy consumers on a global scale.**

As a slight preamble to the detailed description of the complete platform that follows, two rather noteworthy ingredients in our solution to the four classic pain points regard a) digitizing relative trust relationships and b) establishing proxy locations for service providers. Leveraging rural community members entirely on the basis of quantifiable digital relative trust is a new, innovative, and disruptive concept. On the other hand, the idea of leveraging rural small businesses to extend service coverage areas is hardly new. As early as the mid-1850s, Wells Fargo implemented a nationwide money transfer service using exactly the same approach. Around the same time period Western Union was formed, a nationwide courier service that also used the same strategy. Though largely rebuffed today as an antiquated service provider,

Western Union was actually a bold and successful early adopter of technology, implementing the world's first store-and-forward electronic messaging system in the 1950s. In the 1960s they were the primary commercial sponsor of the development of the Automatic Digital Network (AUTODIN), the precursor to the modern Internet. In addition, the United Parcel Service continues to rely heavily on rural proxy locations as parcel pickup and drop-off points.

This raises the question: Why has there has never been a service delivery platform that elegantly resolves the four basic pain points causing most financial exclusion and inadequate frontline healthcare service delivery for Informal Economy consumers? In our view, an elegant solution only became technically feasible in the last twelve months. Furthermore, it is incredibly difficult to develop a viable, entirely market-based solution to such a a byzantine collection of infrastructure deficiencies on a global scale. However, Wikipedia, Linux, and Apache are all fine examples of streamlined solutions to infrastructure deficiencies that once existed on a global scale and were not solved entirely through market-based strategies. Today, each of these technologies not only exists as a layer in a technology stack that is extensively used in mission-critical industrial and commercial settings on a global scale, each is also recognized as a best-in-class solution.

MAF's mission is to provide a true "last mile" solution for informal economy consumers through custom tailored functionality that is created using the same not-for-profit, open-source organizational principles as these technologies' organizations, and that provides:

- *Transparency*. The M-Arca operating platform gives service providers and merchants complete freedom in setting prices, with the understanding that the M-Arca platform also provides consumers with unprecedented transparency to help them understand how prices in their community compare to the prices of services offered elsewhere.

- *Extensibility*. An Arca facilitates three different kinds of extensibility. First, an Arca provides a way for a single bank account to be extended to all customers in a community, simply resolving the problem of completing financial transactions with unbanked customers. Importantly, it is also a valid endpoint for a broad range of payment and service delivery protocols in the finance and healthcare industries, thus extending these protocols to all of the customers in the M-Arca network. Third, M-Arca architecture is extensible in the software design pattern sense of the word, enabling 3rd party developers to safely and easily create plug-ins that enable premium services and content delivery.

- *Proximity*. An Arca is a proximity sensor used to validate the identity and the physical presence of parties to transaction settlements. M-Arca's proximity framework works in tandem with its Quantifiable Digital Relative Trust framework to ensure that merchants are held to high standards. For example, the Arca records the physical presence of an international wire transfer recipient through awareness of the customers' Android phones.

The Arca also presents photo identification of the customer to the cashier as additional visual verification of the customer registered to the Android device being used.

- *Trust*. Trust between parties is both relative and contextual--sometimes it is co-dependent across various factors within the M-Arca ecosystem. Trust manifests itself in interesting ways, some of which are not difficult to digitize and quantify. A customer who frequently visits the merchant for example, provides a plethora of proximity data that produces information about her trustworthiness in the context of commercial interactions at the Merchant's place of business. Meanwhile, merchants invest considerable "sweat equity" into their Arca, which creates measurable intrinsic value to them. This, in turn, provides an input for quantifiable trust. Merchants are graded on the service quality and accuracy of every customer transaction. They must also invest time and effort into self-paced service training programs in order to qualify to offer services. As they are awarded the rights to offer more and more services on their Arca, its intrinsic value increases, which again provides an input for quantifying trust. Also, a merchant with many customers can often be considered more trustworthy than a merchant with fewer customers. The many future MAF contributors who are smarter than us will undoubtedly innovate more and better ways to quantify trust. Most importantly, M-Arca makes digital trust an open, shared resource that is natively available to all service partners.

- *Routing*. An Arca is a messaging and content delivery platform designed to function resiliently in challenging environments with slow or intermittent Internet connectivity, dirty electricity supply, and/or for customers with unreliable or non-existent Internet connections at home or work. The Arca's routing capabilities definitively resolve the second most vexing obstacle to reaching rural customers: a lack of cellular or internet connection.

- *Education*. An Arca is a multi-media knowledge delivery and commercial testing platform that third party providers use to train and ensure minimum know-how standards of the merchants who are working with their products and services. The Arca's education delivery framework makes it possible for third party service providers to quickly and cost-effectively introduce new products and services to rural customers on a global scale.

How M-Arca Works

M-Arca's financial services are structured to perform reliably in rural and Internet-disconnected villages in remote areas where commerce is frequently concentrated around a single monolithic general store (such as the Abarrotero in rural Mexico), and long-distance communication is facilitated by relaying messages from one person to the next until they reach their intended recipient. M-Arca codifies both of these, digitizes identities of the individuals within the community, and codifies and quantifies the relative trust relationships that exist among the individuals in the community. M-Arca incorporates the concept of digital trust into multi-factor authentication, which is fundamental to how merchants are able to settle transactions and offer high value-added services. The first authentication factor is the subjective: the explicit approval

of a trusted third party, the merchant. The second factor is proximity: the GPS coordinates where the transaction occurred, combined with the Arca users who were physically present. And the final factor is the combined explicit approval of all other parties to the transaction.

While the service sounds complex, it represents a facsimile of how these types of operations have always been performed in rural areas. Plus, we have observed that these protocols work equally well in low-income urban communities. Ironically, M-Arca upends conventional wisdom about how to best deliver trust-based services to the rural poor by largely changing nothing at all about the way these people have done business with each other for millennia.

The centerpiece of M-Arca's business strategy is the "Arca," a small on-premise device that makes all of this functionality possible through tight integration with the Android M-Arca mobile app and the Arca Cloud Stack server software that make up the rest of the M-Arca operating environment. The Arca is a router, cloud service connecter, proximity sensor, multi- media player, and block chain node (the "Arca") that is available for purchase for [less than $5,000 M.N.] from participating national retailers in Mexico [and elsewhere] [and potentially with financing schemes available], and is intended to be installed in a rural general store or equivalent retail setting.

The Arca is quite literally a black box. They are powerful, centrally-managed, obsolescence-proof computing modules similar in size to an AppleTV, yet with a 3.5-inch high-resolution touch screen. An Arca requires a 110V power source, and functions best when connected to a broadband Internet connection via WIFI, or with an RJ-45 or USB cable. However, Internet communication can be facilitated using a proprietary peer-to-peer protocol using participating Android mobile devices as "mules" to shepherd packets to and from the nearest available Internet connection.

Once properly installed, which takes around fifteen minutes, a merchant who has gained the trust of at least [ten] customers can begin self-study programs for a range of financial and healthcare services. The self-study programs are designed and administered by M-Arca's third party service provider partners and vary in time requirements and academic rigor. Upon satisfactory completion of the service-level examination--and contingent on continuous satisfactory performance on occasional pop quizzes about the service--the merchant can begin offering services ranging from cash settlement of customer balances to receiving and delivering special order prescription drug medication.

Arcas are intended to be operated in densely populated area like the zocalo of a pueblo. However, anyone who gains the trust of at least [ten] M-Arca users in a single community can purchase, activate, and operate an Arca. Other than the natural economic forces of supply and demand for services, there is no central authority nor policy limitation governing how many Arcas can operate in a given community, making growth of the M-Arca network entirely ad hoc and voluntary.

The Arca natively supports several financial and healthcare industry protocols enabling participation in services ranging from electronic payments to health registry access. Each protocol is voted into the M-Arca ecosystem by one or more MAF Project Management Committees (PMC's). While PMC's are granted considerable autonomy in the technical and service vision of projects, a few commonalities exist. One of these is a bias towards supporting distributed ledger protocols known as block chains to record financial activity and key administrative support activities. Distributed ledgers make it possible for the M-Arca ecosystem to support direct peer-to-peer services requiring no centralized third party verification nor clearing, which eliminates costs. A second is the use of distributed processing across Arcas and Arca Cloud Stack instances as an alternative to architecting and requiring proprietary M-Arca cloud servers.

Most of what the Arca does is hardly extraordinary. Its circuitry consists of a credit card-size multi-core processor, a modest amount of memory, and supporting technologies including GPS, WIFI, bluetooth, graphic accelerator, and on-board encryption and storage. It is a product of the evolution of the Internet of Things (IoT). The Arca acts as an information hub for computer messaging to/from Arca Cloud Stack server instances operated by third party service provider partners, as well as block chains representing financial transactions operating over certain supported protocols. What ***is*** extraordinary about the Arca, however, is that it is an Internet hub that does not require a persistent Internet connection in order to function properly. Ironically, a model for this peer-to-peer messaging technology dates to the 1960s when NASA designed an effective communication scheme to control unmanned space equipment by bouncing messages from satellite to satellite using only solar power.

In M-Arca's case, rather than satellite equipment on a defined trajectory, we instead rely on individual community members with an Android phone in tow who connect to our peer-to-peer network voluntarily and in ad hoc fashion. This means there are unique challenges to overcome. Critical to helping our network achieve its potential in speed and reliability is a loyalty points incentive program for community users. They can download our Android app and opt-in to participate in a peer-to-peer wireless messaging delivery network whereby their phone chirps any time that they enter proximity of another network member and the two Android devices engage to bounce messages from one device to another. Users are made aware of intended destinations (though the contents of messages remain confidential), and they are rewarded with loyalty points if they are part of the chain of participants who ultimately deliver a message to its intended destination. Loyalty programs will be locally administered by the merchant Arca owners. Additionally, the overall quality grade awarded each community network is one of several factors used to qualify a community for external funding. M-Arca's network becomes self-optimizing surprisingly quickly, and in short order can intelligently route messages using this time-tested networking strategy with a minimum of network hops and equally surprising speed.

Arcas are the hubs of distributed community networks of quantifiable digital relative trust by and between community members, forming the cornerstones of the M-Arca operating environment. Merchants earn trust in the M-Arca environment by completing self-paced training programs

related to third party services, completing transactions as agreed and on a timely basis, by performing well on regular pop quizzes administered by the Arca, and by organically growing their network of customers. As merchants earn trust within the M-Arca network they are presented with additional opportunities to offer incrementally higher value-added fee-based services to their customers. As their trust grows, so do the opportunities afforded to them by the third party service providers who leverage the M-Arca network.

Small business operators ("Merchants") use the Arca to settle small financial transactions, offer products and services from third party providers, and confirm third party transactions. This happens on a fee basis, making the Arca a source of additional income for merchants. Merchants will be able to purchase an Arca for [less than $5,000 M.N.] from participating national retailers in Mexico [and elsewhere] [and potentially with financing schemes available]. The Arca requires a broadband or 3G internet connection, a functioning bank account, and the explicit trust of at least [ten] M-Arca users residing in the same community. The device self-activates after the [tenth] user grants trust to the device.

Merchant self-paced service training programs and real-time testing capabilities are core to the functionality of the M-Arca platform. All services offered through the M-Arca platform require some level of self-paced training on the part of the merchant, and may potentially require some level of interaction with the merchant on a frequent, random basis to ensure that the merchant remains knowledgeable on key selling and service delivery concepts related to the service, as well as to ensure that certain expectations related to the customer experience are continuously met.

Any financial institution, specialty finance company, healthcare company, clinical laboratory or other organization can create and provide a service on M-Arca. Anecdotally speaking, the process and experience of creating a M-Arca service is similar to creating say, an iOS app because, like the Apple app store, M-Arca is a walled garden of services which are all held to common standards in terms of user experience, terms and conditions, transparency and ethical business standards. In another similarity to a mobile app store, market acceptance of the service and its eventual success are determined entirely by merchants and consumers. Importantly, service partners must seek out a balance between the training and quality assurance burdens that they impose on merchants versus each service's potential to create revenue for the merchant.

M-Arca publishes a comprehensive API that spans functional software framework library calls as well as other data-driven attributes of the M-Arca ecosystem, such as:

- Streaming video requirements and standards
- Test bank guidelines and standards
- Digital relative trust data models and fact tables
- Minimum service-level response times and performance standards across the M-Arca operating environment

- Important policy information like the partner terms of service by and between the M-Arca Foundation as well as merchants and consumers.

Open Source Software Organization

MAF at its core is an open source software organization formed in 2015 primarily to

- provide a foundation for open, collaborative technology development projects that advance the [MAF Mission]

- coordinate with governments, academic institutions, NGO's, and independent think tanks to facilitate policies and academic research that advance the [MAF Mission]

- increase the range, depth and quality of third party services offered through the M-Arca ecosystem

- create an independent legal entity to which companies and individuals can donate resources and be assured that those resources will be used for the public benefit

- provide a means for individual volunteers to be sheltered from legal suits directed at the Foundation's projects

- protect the 'Arca' brand, as applied to its software products, from being abused by other organizations

MAF's mission is to provide a true "last mile" solution for informal economy consumers, which we strive to accomplish through four flagship projects:

Arca Cloud Stack	Available on Ubuntu Linux as freely downloadable apt-get packages. Source code is available on github and SVN *Platform participation server requirements:* - *automatic uploads of semi-aggregated data to MAF Labs to update the Quantifiable Digital Relative Trust models* - *automatic uploads of fully aggravated transaction fact table data for compulsory non-profit transparency reporting* - *server must meet minimum up-time and performance requirements. Sanctions or expulsion from the platform if service consistently underperforms basic minimum performance thresholds. Monitored with statcounter.com ?*

	- *Server instance must meet minimum availability of compute cycles for shared responsibility data processing for maintenance and updates to Digital Relative Trust models and factor tables.*
Arca Hardware Standard	Detailed hardware standard is published on github in various formats
ArcaOS	Android-based Arca run-time operating environment based on an extensible architecture that accommodates proprietary ArcaOS Add-ins: bundled, late-binding platform extensions that are compiled with an Android Studio Plugin published by MAF. ArcaOS Add-ins are self-installing, self-updating bundles (invisible to the Arca merchant) that are activated when the merchant chooses a new third party service to offer to customers. ArcaOS itself is available via github (source code) and m-arca.org (executable version).
M-Arca Mobile App	Source code is available via github and SVN. Executable available on Android Store.

Technology Influencing M-Arca

M-Arca's financial services are simple, intuitive, reliable, fast, and competitively priced. However, the services themselves and the requisite support processes underlying these services are anything but simple. A great deal of technology exists under the hood to make everything work. That is, a lot of really high-powered, really disruptive technology.

As an an aside, technologists tend to know for certain when they are truly innovating because when they are, and until they've earned broad market acceptance for their new gadget, it feels like they're standing in the Siberian frozen tundra. And that is exactly how we feel right now; though in our case it feels more like we are in the Canyon de Cobre in the remote Sierra mountains of Chihuahua.

M-Arca is acting on the convergence of a handful of incredibly important, highly disruptive developing technology trends that are not yet visible to the naked eye and are so far invisible to the international financial services community:

- Cutting-edge digital identity and digital trust strategies being developed at MIT media labs.
- Equally cutting-edge ideas to create trusted public registries using distributed ledgers made from cryptographic block chains.
- Advances in routing strategies for mobile ad hoc voluntary peer-to-peer networks.
- A proliferation of powerful Android smartphones entering the rural Mexican market, nearly to the point of saturation.
- An explosion of low-cost ASICs that are now on the market. It is now possible for example, to mount an entire Linux server on a single chip, together with WIFI and Bluetooth protocols included in the same chip package.
- Improvements to ASIC power consumption that allow them to be powered bynewly improved low-cost solar panels.
- A profound streamlining in hardware design methodologies significantly reducing the number of engineers required to design, prototype, QC, and manufacturer in-line systems.
- Significant reductions in batch sizes required to achieve nearly full economy of scale in production manufacturing.
- Extraordinary improvements to the commercial quality of open source systems software and application stacks.
- Enormous improvements to accessibility and scalability of these open source software stacks via low-cost / no-cost cloud services providers.

This esoteric collection of seemingly unrelated technology trends converge, on the one hand, and in part, as an idea being made popular as the Internet of Things (IoT), largely manifested as wearable products like an Apple watch for example. Stepping back so as to soak up the bigger picture, however, what this trend means to us is that **computationally intensive services can now be deployed on infinitely scalable mobile ad hoc networks made of powerful user-contributed equipment, especially in remote, previously inaccessible areas with sparse connectivity to electricity and Internet service.**

More specifically, our attention is drawn to the positive impact that these convergences can have on financial inclusion and frontline healthcare delivery to the billions of underserved consumers around the world. One of the many obstacles to otherwise fantastic mobile banking or healthcare delivery ideas is that Internet and electricity services are inconsistent and unreliable, and unfortunately, we do not expect that to change in rural Mexico during our lifetimes. But, we will extend the Internet — for our purposes at least — by creating our own peer-to-peer network. We will do so by co-opting community members' cell phones and by adding low-cost, self-powered, fixed-location network nodes in central locations in pueblos, like the abarrotero for example. The idea itself is hardly new. in fact, we are only marginally improving upon the way that postal mail has been delivered in rural areas around the world for centuries.

Annex 1: Financial Services In The Informal Economy

Remittances originating from the USA destined for Mexico total more than $25 billion dollars annually in a highly consolidated market that is notorious for being as expensive as it is inconvenient for customers. Average remittance transactions cost more than 15% of amounts being sent for most customers, but routinely cost more than 30% for small balance transfers of less than $100 dollars. Remittances are typically delivered through large national chain operators whose branches are not conveniently located for a large cohort of recipient customers, and the often significant travel costs to/from a money transfer branch location are an additional hidden cost to the consumer. To date, we have not seen any project nor institution successfully deliver a compelling financial service to a rural Mexican customer's doorstep — the "Last Mile" if you will. Substantial opportunities exist to disrupt this market on the bases of cost, speed, and customer convenience.

Meanwhile, we reckon that the potential market for small balance peer-to-peer loans in Mexico could nearly match the international remittance market in size, though in fact this market does not yet exist. Micro-lending, a billion dollar market in Mexico and the closest proxy, is a high-cost and labor-intensive alternative. Micro-lending operations in Mexico are modeled on a Nobel Prize winning, though antiquated, lending model first introduced to a mostly illiterate populace in Bangladesh in 1981. State of the art technology at the time was literally pencil and paper. An opportunity exists to develop a peer-to-peer lending market using many of the proven best practices of Grameen Bank's original 2.0 model, albeit updated to reflect the high literacy rate in Mexico and equally high penetration rates of internet-connectable devices in rural Mexico.

A large percentage of both markets are mutually inclusive, residing in rural parts of Mexico, beyond the coverage areas of both 3G cellular and broadband internet service. Delivering compelling financial services like fast, low-cost international money transfers and low-interest peer-to-peer loans to the rural unbanked in Mexico requires a deep reassessment of the global financial system and its legacy infrastructure, its business strategies, conventional wisdom surrounding financial product design, and rapidly evolving technology trends. M-Arca was formed to do exactly that.

M-Arca will provide fast, reliable and inexpensive international wire transfers and low-balance, low-interest peer-to-peer unsecured consumer loans to Mexico's rural unbanked. We approach each product with a design philosophy underpinned by a deep localized understanding of how rural Mexican communities operate, and we combine this with an intensely pragmatic approach to current state-of-the-art technology. Our financial products are intuitive, accessible, convenient, competitively priced and uniquely suited to the rural market.

A Commercial Perspective

There are several revenue-producing enterprises within the M-Arca ecosystem. First, MAF maintains a laissez faire policy towards third party provider service pricing, though we do incorporate comparative service pricing information to consumers as part of our transparency mandate. The M-Arca environment allows for several styles of fee models in service bundles. Importantly, service providers are in absolute control of their server instances of the Arca Cloud Stack, permitting limitless integration capabilities to legacy systems and external data services providers.

Second, each of the various blockchain payment protocols supported by M-Arca require market makers to physically exchange currency pairs in order to facilitate any international payments / wire transfers.

Third, merchants are free to place surcharges on the services that they offer, within the pricing policy constraints of the service providers. To re-iteratehowever, an important element of M-Arca's mandate is providing transparency to consumers in service pricing, so consumers will always be alerted of any material detrimental pricing variances.

International Wire Transfer Service - Conceptual Business Plan

User balance transfers of like currency are a native, free service of the M-Arca framework. International balance transfers ("wire transfers") are also free aside from market making bid-ask spreads. Third party service providers can both enhance and extend this completely no-frills service to create premium branded services for their customers.

Remittances are M-Arca's bedrock service. M-Arca acts as its own USD->MXN market maker for all of its remittances and generates 100% of revenues for its international transfer services from market making activities.

Strategically, we intend each community purchase of an Arca to be immediately and absolutely disruptive to the local market, resulting in a near-monopoly in each micro market. Our product is cheaper, more reliable and more useful than any market alternative. M-Arca can work harmoniously with many international transfer services, enabling us to co-opt US customer acquisition of many large estimating franchises. We charge no bridging fees, though we do require that we be the market maker.

M-Arca wire transfer service is more compelling to customers than existing models on multiple levels. First, the wire transfer fixed cost of $2.00 is much cheaper than the next closest competitor. This makes money transfers of significantly less than a hundred dollars possible for the first time. More significantly, the M-Arca's franchise models put points of presence within walking distance of most customers. Lastly, wires can be initiated from the USA using prepaid Visa debit cards which can be purchased at thousands of retail locations around the country. We believe that most US remittances are initiated by male household members who are heavily influenced by female recipients within the same rural Mexican household. **Our view is that we win the business of the man in USA by earning the trust of the woman in Mexico.**

We should point out that Pesos received to Bluetooth-enabled Android phone hot wallets in Mexico can be exchanged toll-free with other community users. We believe that our business model incentivizes Mexican recipients to conduct business on a person-to-person basis using Peso balances stored in their Android hot wallets because M-Arca only charges for the disbursement of funds in cash rather than the transfer of funds themselves. For example, an international transfer of $10 dollars can arriveto the recipient as $170 Pesos and be immediately transferred electronically to a local carpenter in the community for a household repair without incurring any fees. This in our opinion, encourages smaller, more frequent use of the international transfer service, as well as extensive use of local Peso balance exchanges as a means of commerce, both of which further entrench M-Arca's market presence in each micro market where it exists.

Peer-to-Peer Lending Platform

The M-Arca framework includes a completely no-frills multi-lender / multi-guarantor peer-to-peer lending framework that third party service providers can both enhance and extend to create premium branded consumer lending services for their customers.

Multi-guarantor, unsecured consumer loans are an ancillary, albeit core service of M-Arca. M-Arca generates revenue by charging participation fees to outside investors who participate in syndicated loans to borrowers residing within qualified communities. Merchant Arca owners earn a $30 Pesos flat fee on cash loan disbursements to borrowers. Merchants are also required to host recurring loan program guarantor meetings.

M-Arca users can earn borrowing privileges by participating as a guarantor and as a lender in the community peer-to-peer cash loan program. Peso balances stored in users' Android hot wallets can be allocated ad hoc to the pool of funding made available to potential borrowers in the local community. Interest rates are negotiated by and between the lenders, guarantors and the borrower while lenders receive 100% of principal and interest loan installment payments. Loan products are simple interest, fully amortized, no-frills products with $5,000 M.N. maximum loan limits, and no origination,commitment, or late payment fees. The loan program largely follows time-tested best practices gleaned from Grameen 2.0 micro lenders, though all activities are voluntarily and automatically monitored via the users' Android apps and the Arca.

M-Arca's peer-to-peer lending program is powered entirely by the Android and Arca computing equipment owned by the community and is therefore infinitely scalable. The lending program is self-administered entirely by the local community users, for the direct economic benefit of the local community users. Users earn trust within the M-Arca platform by performing activities and obligations according to the policies established by the platform. This includes participation in community lending meetings and making loan installments as and when agreed.

Communities who consistently operate a successful lending programs synergistically gain collective trust greater than that of the sum of the individuals. These community success stories

become eligible to receive matching funds from outside the community. Participation in the program is not free to external investors, however, as M-Arca charges a nominal participation/syndication fee to the external investor/lenders. External investors earn a large portion of the gross interest rate negotiated by and between the local lenders/guarantor and the borrower (M-Arca retains the difference as the syndication fee). M-Arca community lenders receive market guidance directly from the Android app to set borrower interest rates sufficient to compel external investor participation.

M-Arca structures participation fees in the form of a residual cash flow participation payable only after principal and interest payments due to the external investor have been paid in full.

Editorial Notes

a) The word "Arca" comes from the central Mexican prehispanic dialect Nahuatl and means literally, "Community Chest".

b) The hyphenation "M-Arca" represents a show of respect and a nod of street credibility to M-Pesa, currently the world's leading mobile-phone based money transfer and micro-financing service for the unbanked, launched in 2007 by Vodafone for Safaricom and Vodacom, the largest mobile network operators in Kenya and Tanzania.

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