



了解 Libra

白皮书 · 来自 Libra 协会成员

Libra 的使命是建立一套简单的、无国界的货币和为数十亿人服务的金融基础设施。

本白皮书概述了我们努力打造一个新的去中心化区块链、一种低波动性加密货币和一个智能合约平台的计划，以期负责任的金融服务创新开创新的机遇。

问题陈述

互联网和移动宽带的诞生令全球数十亿人得以获得世界各地的知识与信息、享受高保真通信，以及各种各样成本更低、更便捷的服务。如今，只需使用一部 \$40 美元的智能手机，即可在世界上几乎每一个角落使用这些服务¹。这种互联便利性让更多人得以进入金融生态系统，从而推动了经济赋权。通过共同努力，科技公司和金融机构还开发出了帮助增强全球经济赋权的解决方案。尽管取得了这些进展，但世界上仍有很多人游离在外。全球仍有 17 亿成年人未接触到金融系统，无法享受传统银行提供的金融服务，而在这之中，有 10 亿人拥有手机，近 5 亿人可以上网²。

对于很多人而言，金融系统的某些方面与互联网诞生前的电信网络颇为相似。二十年前，在欧洲发送一条短信的平均价格是 16 欧分³。而现在，只需要一部购买了基本流量套餐的智能手机，任何人都可以在全球范围内免费通信。那时的通信服务很贵，但是价格是统一的；而如今由于受到成本、可靠性和汇款流畅性方面的影响，迫切需要金融服务的人往往获得的金融服务不足或会受到限制。

纵观全球，穷人为金融服务支付的费用更多。他们辛辛苦苦赚来的收入被用来支付各种繁杂的费用，例如汇款手续费、电汇手续费、透支手续费和 ATM 手续费等。发薪日贷款的年化利率可能达到 400% 甚至更高，仅借贷 \$100 美元的金融服务收费便可高达 \$30 美元⁴。当被问及为什么仍然徘徊在现行金融体系的边缘时，那些仍“未开立银行帐户”的人往往指出：没有足够的资金，各种不菲且难以预测的费用，银行距离太远，以及缺乏必要的手续材料。⁵

区块链和加密货币具有许多独特的属性，因而具备解决金融服务可用性和信誉问题的潜力。这些属性包括：分布式管理，确保网络不受单一实体控制；开放访问，允许任何能连接互联网的人参与其中；以及安全加密技术，保护资金安全无虞。

但是，现有的区块链系统尚未获得广泛采用。现有区块链缺乏可扩展性，加密货币具有波动性，到目前为止，这些因素导致现有的加密货币在保值和交换媒介方面均表现欠佳，因而阻碍了它们在市场上的广泛使用。另外，一些项目还试图破坏现有体系并绕过监管，而不是在合规和监管方面进行创新，以提高反洗钱举措的效力。我们相信，携手金融部门（包括各个行业的监管机构和专家）进行合作和创新，是确保为这一新体系建立可持续、安全和可信的支撑框架的唯一途径。这种方法能够实现巨大的飞跃，让我们朝着更低成本、更易进入、联系更紧密的全球金融系统迈进。

机遇

在我们携手踏上这段征程之际,我们认为有必要向社群分享我们的信念,以便于了解我们计划围绕这一倡议建立的生态系统:

- 我们认为,应该让更多人享有获得金融服务和廉价资本的权利。
- 我们认为,每个人都享有控制自己合法劳动成果的固有权利。
- 我们相信,开放、即时和低成本的全球性货币流动将为世界创造巨大的经济机遇和商业价值。
- 我们坚信,人们将会越来越信任分散化的管理形式。
- 我们认为,全球货币和金融基础设施应该作为一种公共产品来设计和管理。
- 我们认为,所有人都有责任帮助推进金融普惠,支持遵守网络道德规范的用户,并持续维护这个生态系统的完整性。



Libra 简介

我们的世界真正需要一套可靠的数字货币和金融基础设施，两者结合起来必须能兑现“货币互联网”的承诺。

在移动设备上保护金融资产应该既简单又直观。无论您居住在哪里，从事什么工作或收入怎样，在全球范围内转移资金应该像发送短信或分享照片一样轻松、划算，甚至更安全。金融生态系统的新产品创新和新参与者将有助于降低每个人的获取资本的难度，同时为更多人提供顺畅无缝的支付体验。

现在正是在区块链技术的基础上创造一种新型数字货币的最佳时机。Libra 的使命是**建立一套简单的、无国界的货币和为数十亿人服务的金融基础设施**。Libra 由三个部分组成，它们将共同作用，创造一个更加普惠的金融体系：

1. 它建立在安全、可扩展和可靠的**区块链**基础上；
2. 它以赋予其内在价值的**资产储备为后盾**；
3. 它**由独立的 Libra 协会治理**，该协会的任务是促进此金融生态系统的发展。

Libra 货币建立在“Libra 区块链”的基础上。因为它旨在面向全球人民提供服务，所以实现 Libra 区块链的软件是开源的，以便所有人都可以在此基础上进行开发，且数十亿人都可以依靠它来满足自己的金融需求。设想一下，开发者和组织机构将构建一个开放、可彼此协作的金融服务生态系统，帮助人们和公司持有和转移 Libra 以供日常使用。随着智能手机和无线数据的激增，越来越多的人将通过这些新服务上网和使用 Libra。为了使 Libra 生态系统能够在一段时间内实现这一愿景，我们从零开始构建了其所需的区块链，同时优先考虑了可扩展性、安全性、存储效率和处理量以及对未来的适应性。请继续阅读有关 Libra 区块链的概述，或阅读[技术论文](#)。

这种货币单位被称为“Libra”。Libra 需要被很多地方接受，且对于那些想要使用它的人而言应该易于获得。换言之，人们需要相信他们可以使用 Libra，并且相信其价值将随着时间的推移保持相对稳定。与大多数加密货币不同，Libra 完全由真实资产储备提供支持。对于每个新创建的 Libra 加密货币，在 Libra 储备中都有相对应价值的一篮子银行存款和短期政府债券，以此建立人们对其内在价值的信任。Libra 储备的目的是维持 Libra 加密货币的价值稳定，确保其不会随着时间剧烈波动。请继续阅读有关 Libra 及其储备的概述，或前往[此处](#)查看详情。

Libra 协会是一个独立的非营利性成员制组织，总部设在瑞士日内瓦。协会旨在协调和提供网络与资产储备的管理框架，并牵头进行能够产生社会影响力的资助，为普惠金融提供支持。本白皮书说明了其使命、愿景和权限范围。协会的成员系统由运作 Libra 区块链的验证者节点网络构成。

Libra 协会的成员将包括分布在不同地理区域的各种企业、非营利组织、多边组织和学术机构。共同负责协会章程定稿,并在完成后成为协会“创始人”的首批组织包括(按行业):

- 支付业: Mastercard, **PayPal, PayU (Naspers' fintech arm), Stripe, Visa**
- 技术和交易平台: **Booking Holdings, eBay, Facebook/Calibra, Farfetch, Lyft, Mercado Pago, Spotify AB, Uber Technologies, Inc.**
- 电信业: **Iliad, Vodafone Group**
- 区块链业: **Anchorage, Bison Trails, Coinbase, Inc., Xapo Holdings Limited**
- 风险投资业: **Andreessen Horowitz, Breakthrough Initiatives, Ribbit Capital, Thrive Capital, Union Square Ventures**
- 非营利组织、多边组织和学术机构: **Creative Destruction Lab, Kiva, Mercy Corps, Women's World Banking**

我们希望到 2020 年上半年针对性发布时,Libra 协会的创始人数量能够达到 100 个左右。

Facebook 团队与其他创始人合作,在 Libra 协会和 Libra 区块链的诞生中扮演了关键角色。Facebook 将保有领导角色至 2019 年结束。当然,在 Libra,协会拥有最终决策权。Facebook 创立了受监管的子公司 Calibra,以确保社交数据与金融数据相互分离,同时代表其在 Libra 网络中构建和运营服务。

一旦 Libra 网络发布,Facebook 及其关联机构将与其他创始人享有相同的权利并承担相同的义务和财务责任。作为众多成员中的一员,Facebook 会在协会管理方面承担与其他成员相同的职责。

区块链分为“许可型区块链”和“非许可型区块链”,这根据实体是否能作为验证者节点接入区块链平台来决定。在“许可型区块链”中,实体通过权限授予方式运行验证者节点。在“非许可型区块链”中,符合技术要求的任何实体都可以运行验证者节点。从这个意义上说,Libra 将以许可型区块链的形式起步。

为了确保 Libra 真正开放,始终以符合用户最佳利益的方式运作,我们的目标是让 Libra 网络成为非许可型网络。但挑战在于,我们认为目前还没有成熟的解决方案可以通过非许可型网络,提供支持全球数十亿人和交易所所需的规模、稳定性和安全性。协会的工作之一便是与社群合作,研究和实施从许可型向非许可型的过渡,过渡工作将在 Libra 区块链和生态系统公开发布后五年内开始。

无论是在许可型还是非许可型状态下,Libra 区块链都将向所有人开放:任何消费者、开发者或公司都可以使用 Libra 网络、在这个网络上构建产品,并通过他们的服务实现增值作用。这种开放性是 Libra 精神的本质。开放访问权限能够确保较低的进入和创新门槛,并鼓励有利于消费者的良性竞争。这是实现以下目标的基础:为世界建立更普惠的金融服务。

蜜蜂学堂

蜜蜂内参

不要错过让你洞察整个商业世界的蜜蜂内参

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每日精选3份最值得学习的资料给您，不定期
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撩他！撩他！



Libra 区块链

Libra 区块链的目标是成为金融服务的坚实基础,包括打造一种新的全球货币,满足数十亿人的日常金融需求。通过对现有方案的评估,我们决定基于下列三项要求构建一个新的区块链:

- 能够扩展到数十亿帐户,这要求区块链具有极高的交易吞吐量和低延迟等特点,并拥有一个高效且高容量的存储系统。
- 高度安全可靠,可保障资金和金融数据的安全。
- 足够灵活,可支持 Libra 生态系统的管理以及未来金融服务领域的创新。

Libra 区块链就是为了全面满足这些要求,在现有项目和研究的基础上从头开始设计和构建而成的,集合了各种创新方法和已被充分掌握的技术。下一节将重点介绍**有关 Libra 区块链的三项决策**:

1. 设计和使用 Move 编程语言。
2. 使用拜占庭容错 (BFT) 共识机制。
3. 采用和迭代改善已广泛采用的区块链数据结构。

“Move”是一种新的编程语言,用于在 Libra 区块链中实现自定义交易逻辑和“智能合约”。由于 Libra 的目标是每天为数十亿人服务,因此 Move 的设计首先考虑到安全性和可靠性。Move 是从迄今为止发生的与智能合约相关的安全事件中吸取经验而创造的一种编程语言,能从本质上令人更加轻松地编写符合作者意图的代码,从而降低了出现意外漏洞或安全事件的风险。具体而言,Move 从设计上可防止数字资产被复制。它使得将数字资产限制为与真实资产具有相同属性的“资源类型”成为现实:每个资源只有唯一的所有者,资源只能花费一次,并限制创建新资源。Move 语言还便于自动验证交易是否满足特定属性,例如,仅更改付款人和收款人帐户余额的付款交易。通过优先实现这些特性,Move 可帮助保持 Libra 区块链的安全性。通过减轻关键交易代码的开发难度,Move 可以可靠地执行 Libra 生态系统的管理政策,例如对 Libra 货币和验证者节点网络的管理。Move 将加快 Libra 区块链协议以及在此基础上构建的任何金融创新的演变。我们预计将在一段时间后向开发者开放创建合约的权限,以支持 Move 的演变和验证。

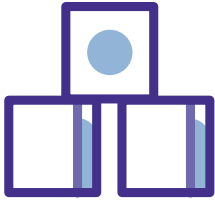
Libra 区块链采用了基于 LibraBFT 共识协议的 BFT 机制来实现所有验证者节点就将要执行的交易及其执行顺序达成一致。**这种方法可以在网络中建立信任**,因为即使某些验证者节点(最多三分之一的网络)被破坏或发生故障,BFT 共识协议的设计也能够确保网络正常运行。与其他一些区块链中使用的“工作量证明”机制相比,这类共识协议还可实现高交易处理量、低延迟和更高能效的共识方法。

为了保障所存储的交易数据的安全,Libra 区块链中的数据受梅克尔树的保护,它是一种已在其他区块链中广泛使用的数据结构,可以侦测到现有数据的任何变化。不同于以往的区块链都将区块链视为交易区块的集合,**Libra 区块链是一种单一的数据结构,可长期记录交易历史和状态**。这种实现方式简化了访问区块链的应用程序的工作量,允许它们从任何时间点读取任何数据,并使用统一框架验证该数据的完整性。

Libra 区块链遵循匿名原则, 允许用户持有一个或多个与他们真实身份无关的地址。这是许多用户、开发者和监管机构都熟悉的模式。Libra 协会将负责监督 Libra 区块链协议和网络的演变, 并将继续评估可增强区块链隐私保护的新技术, 同时考虑它们的实用性、可扩展性和监管影响。

如需了解详情, 请阅读有关 Libra 区块链的[技术论文](#)。也可查阅有关 [Move 编程语言](#)和 [LibraBFT 共识协议](#)的详细信息。**我们已经推出了 [Libra 测试网](#)**的早期版本, 并提供了配套文档。测试网仍处于开发阶段, API 可能会发生变化。我们致力于开诚布公地与社群合作, 因此希望您可以阅读相关内容、进行开发和提供反馈。





Libra 货币和储备

我们认为，世界需要一种全球性的数字原生货币，它能够集世界上最佳货币的特征于一体：稳定性、低通货膨胀率、全球普遍接受和可互换性。Libra 货币旨在帮助满足这些全球需求，以期扩展金钱对全球人民的影响。

Libra 的目标是成为一种稳定的数字加密货币，将全部使用真实资产储备（称为“Libra 储备”）作为担保，并由买卖 Libra 并存在竞争关系的交易平台网络提供支持。这意味着，任何持有 Libra 的人都可以获得高度保证，他们能够根据汇率将自己持有的这种数字货币兑换为当地货币，就像在旅行时将一种货币换成另一种货币一样。这种方法类似于过去引入其他货币的方式：确保这种货币可以用于换取真实资产，比如黄金。目的是为了帮助培养人们对新货币的信任，并在货币诞生初期实现广泛使用。尽管 Libra 不会使用黄金作为支持，但它将采用一系列低波动性资产（比如，由稳定且信誉良好的中央银行提供的现金和政府证券）进行抵押。

必须要强调的是，这意味着一个 Libra 并不总是能够转换成等额的当地指定货币（即 Libra 并不与单一货币“挂钩”）。相反，随着标的资产的价值波动，以任何当地货币计价的 Libra 价值也可能会随之波动。然而，选择储备资产的目的是最大限度减少波动性，让 Libra 的持有者信任该货币能够长期保值。Libra 储备中的资产将由分布在全球各地且具有投资级信用评价的托管机构持有，以确保资产的安全性和分散性。

Libra 背后的资产是它与许多现有加密货币之间的主要差异，这些加密货币缺乏这种内在价值，因此价格会因心理期望而大幅波动。然而，Libra 的确是一种加密货币，因此，它继承了这些新型数字货币的几个引人注目的特性：能够快速转账，通过加密保障安全性以及轻松自由地跨境转移资金。正如当今世界人们可以随时随地使用手机向好友发送消息一样，我们同样可以通过 Libra 即时、安全且经济地管理资金。

储备资产的利息将用于支付系统的成本、确保低交易费用、分红给生态系统启动初期的投资者（前往[此处](#)阅读“Libra 协会”相关内容），以及为进一步增长和普及提供支持。储备资产的利息分配将提前设定，并将接受 Libra 协会监督。Libra 用户不会收到来自储备资产的回报。

有关储备政策和 Libra 货币的详情，请参阅[此处](#)。



Libra 协会

Libra 的使命是建立一套简单的、无国界的货币和为数十亿人服务的金融基础设施。为了实现这一使命，Libra 区块链和 Libra 储备需要一个由多元化的独立成员构成的监管实体。这个监管实体就是 Libra 协会，一家独立的非营利性会员制组织，总部位于瑞士日内瓦。瑞士一直以来都持全球中立立场，并对区块链技术持开放性态度，而 Libra 协会也力求成为一家中立的国际性机构，因此在瑞士注册是理所当然的选择。Libra 协会旨在促进 Libra 区块链的运营；协调各个利益相关方（网络的验证者节点）在推广、发展和扩张网络的过程中达成一致；以及管理储备资产。

Libra 协会由 Libra 协会理事会管理，理事会由各验证者节点各指派一名代表构成。理事会成员共同对网络和储备的治理制定决策。最初，理事会由身为[创始人](#)的全球企业、非营利组织、多边组织和学术机构组成。所有决策都将通过理事会做出，重大政策或技术性决策需要三分之二的成员投票表决同意，即 BFT 共识协议中所要求的绝对多数网络成员。

通过协会，验证者节点得以与网络的技术方案和发展目标保持一致。在这方面，协会类似于其他非营利性实体，通常以基金会的形式出现，管理开源项目。由于 Libra 未来的发展依赖于一个分散的、不断成长的开源贡献者社群，因此协会是一个必要的媒介，就开发和采用什么样的协议或规范给予引导。

Libra 协会还是一个负责管理 Libra 储备的实体，因此掌控着 Libra 经济的稳定和成长。只有 Libra 协会能够制造（mint）和销毁（burn）Libra。只有当授权经销商投入法定资产从协会买入 Libra 币以完全支持新币时，Libra 币才会被制造。只有当授权经销商向协会卖出 Libra 币以换取抵押资产时，Libra 币才会被销毁。由于授权经销商始终能够将 Libra 币以等于篮子价值的价格卖给储备，因此 Libra 储备承担着“最后的买家”的角色。Libra 协会的这些活动受[储备管理政策](#)的监管和约束，该政策只能在绝对多数协会成员同意的情况下进行更改。

在该网络发展的最初几年，需要额外依靠一些角色来替协会完成下列工作：招募担当验证者节点的创始人；为快速启动生态系统而进行筹款；设计和实施激励计划，从而推动 Libra 被广泛采用，包括向创始人发放此类激励奖金；以协会名义建立社会影响力资助计划。

协会的一个额外目标是开发和推广一种开放性身份标准。我们认为，分散而便携的数字身份是实现金融普惠和竞争的先决条件。

Libra 协会的一个重要目标就是逐步提高分散化的程度。这种去中心化有助于降低网络构建和使用的进入门槛，而且从长远来看，它也有助于提高 Libra 生态系统的弹性。如上文所述，协会将逐步实现 Libra 网络的非许可型管理和共识。协会将力求在五年内启动这一过渡，并以此逐渐减少对创始人的依赖。同样地，作为 Libra 储备的管理者，Libra 协会也会力争最大程度降低对自身的依赖。

如需详细了解 Libra 协会，请参阅[此处](#)。



Libra 的下一步计划是什么？

今天，我们将发布此文档来概述有关 Libra 的目标，并推出 libra.org 作为协会和所有 Libra 事务的信息发布主页。该站点将在未来几个月内持续发布更新。我们还开放了 [Libra 区块链](#) 的源代码并推出 Libra 的初始测试网，供开发者尝试并在此基础上进行开发。

预定的针对性发布日期为 2020 年上半年，而在此之前，我们还有大量工作要做。

- Libra 区块链：
 - 在未来几个月内，协会将收集社群关于 Libra 区块链原型的反馈，然后进入生产就绪阶段。特别要说明的是，这项工作将侧重于确保协议和实现的安全性、性能和可扩展性。
 - Libra 协会将构建有据可查的 API 和库，实现用户与 Libra 区块链之间的互动。
 - Libra 协会将使用 [开源方法](#) 为 Libra 区块链背后的协同技术开发创建框架。我们将建立适当的程序，用于讨论和审核针对区块链底层协议和软件的更改。
 - 协会将对区块链执行广泛的测试，从对协议的测试到联合各家实体（如钱包服务和交易平台）对网络进行整体测试，从而确保系统在发布前运转正常。
 - 协会将努力促进 Move 语言的发展，并且在 Libra 生态系统发布之后，一旦 Move 语言发展趋于稳定，我们将为第三方创建智能合约确立相应路径。
 - 协会将与社群一起，在通往非许可型生态系统的道路上攻克技术难题，力争实现我们在发布后五年内开始过渡的目标。
- 储备：
 - 协会将为储备设立监管小组，成员由分布在各地且受到监管的全球机构托管人组成。
 - 协会将为储备建立运营程序，以便与授权经销商进行交易，并确保高透明度和可审计性。
 - 协会将制定适当的政策和程序，以规范协会更改储备篮子组成的方式。
- Libra 协会：
 - 我们将扩充 Libra 协会理事会，使其包含大约 100 名分布在各地的多元化成员，所有成员均担当 Libra 区块链的初始验证者节点。
 - 我们将在目前提出的治理结构的基础上，为协会制定一份全面的章程和一系列细则并予以采用。
 - 我们将为协会招募一名常务董事，并与此人一起继续组建协会的执行团队。
 - 我们将选定与我们肩负共同使命的社会影响力合作伙伴，并与他们合作建立社会影响力咨询委员会和制定社会影响力计划。



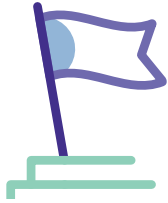
如何参与

协会希望打造一个充满活力的生态系统,供开发者构建应用和服务,从而鼓励世界各地的人们使用 Libra。协会认为,如果这个系统能让世界上任何个人或公司以公平实惠的方式即时支取自己的资金,它就是成功的。例如,成功将意味着,在国外工作的人可以通过一种方便快捷的方式将钱汇回家,而大学生则可以像买咖啡一样轻松地支付房租。

我们的征途才刚刚开始,需要寻求社群的帮助。如果您相信 Libra 能够为全球数十亿人服务,请分享您的观点并加入我们。为了让金融普惠在世界各地成为现实,您的反馈意见不可或缺。

- **如果您是一名研究人员或协议开发者**,您可以提前预览 [Libra 测试网](#) (根据 Apache 2.0 开源许可发布) 和配套文档。这个流程才刚刚启动,测试网还是一个开发中的早期原型,但您可以立即读取相关内容、进行开发和提供反馈。由于目前的重点是保持原型的稳定性,项目进度最初可能会偏慢,以便我们采纳社群的意见。但是,我们致力于建立一个面向社群的开发流程,并从合并请求开始,尽快向开发者开放此平台。
- **如果您想了解 Libra 协会**,请[前往此处](#)查看详情。
- **如果您的组织有意成为创始成员或申请向 Libra 协会捐赠社会影响力资助**,请[前往此处](#)查看详情。

在未来几个月,协会将与全球社群合作,并继续与世界各地的决策者携手,推动实现这一使命。



结语

Libra 的目标如下：在安全稳定的开源区块链基础上创建一种稳定的货币，该货币以真实资产储备为后盾，并由独立协会管理。

我们希望创造更完善、更实惠的开放式金融服务，人们不论身份、不论地域、不论职业、不论贫富，均可享受这种服务。我们深知，要实现这样的愿景将需要长久的艰辛努力，并且绝非一己之力可以完成，这将需要大家同心协力、脚踏实地地向前迈进。希望您能加入我们，协助我们将这一梦想变成现实，造福全球数十亿人。

¹ Best Buy. "AT&T prepaid Alcatel CAMEOX device purchase." Bestbuy.com. 网址: <https://www.bestbuy.com/site/at-t-prepaid-alcatel-cameox-4g-lte-with-16gb-memory-cell-phone-arctic-white/6008102.p?skuld=6008102> (访问日期: 2019 年 5 月 15 日)。

² A. Demirgüç-Kunt, L. Klapper, D. Singer, S. Ansar, and J. Hess. The Global Findex database 2017: Measuring financial inclusion and the fintech revolution. World Bank Group, 2018. 访问日期: 2019 年 5 月 15 日。Globalindex.worldbank.org. [Online]. 网址: https://globalindex.worldbank.org/sites/globalindex/files/2018-04/2017%20Findex%20full%20report_0.pdf

³ OECD. Mobile phones: Pricing structures and trends. Paris, France: OECD Publishing, 2000, p. 67. [Online]. 网址: https://books.google.com/books?id=pcP84M_GBEOC&pg=PA6&lpg=PA6&dq=1999+price+SMS+europe&source=bl&ots=TlbwgZWCmj&sig=ACfU3U2Z_yRawxW78qVSVO_wHCtRupoqoA&hl=en&sa=X&ved=2ahUKewjOmeG9tMHiAhVVFzQIHU8eBEMQ6AEwD3oECAkQAQ#v=onepage&q=SMS&f=false

⁴ Consumer Federation of America. "How payday loans work." Payday Loan Consumer Information. Available: <https://paydayloaninfo.org/facts> (访问日期: 2019 年 5 月 19 日)。

⁵ A. Demirgüç-Kunt, L. Klapper, D. Singer, S. Ansar, and J. Hess. The Global Findex database 2017: Measuring financial inclusion and the fintech revolution. World Bank Group, 2018. 访问日期: 2019 年 5 月 15 日。Globalindex.worldbank.org. [Online]. 网址: https://globalindex.worldbank.org/sites/globalindex/files/2018-04/2017%20Findex%20full%20report_0.pdf



An Introduction to Libra

White Paper • From the Libra Association Members

Libra's mission is to enable a simple global currency and financial infrastructure that empowers billions of people.

This document outlines our plans for a new decentralized blockchain, a low-volatility cryptocurrency, and a smart contract platform that together aim to create a new opportunity for responsible financial services innovation.

Problem Statement

The advent of the internet and mobile broadband has empowered billions of people globally to have access to the world's knowledge and information, high-fidelity communications, and a wide range of lower-cost, more convenient services. These services are now accessible using a \$40 smartphone from almost anywhere in the world.¹ This connectivity has driven economic empowerment by enabling more people to access the financial ecosystem. Working together, technology companies and financial institutions have also found solutions to help increase economic empowerment around the world. Despite this progress, large swaths of the world's population are still left behind — 1.7 billion adults globally remain outside of the financial system with no access to a traditional bank, even though one billion have a mobile phone and nearly half a billion have internet access.²

For too many, parts of the financial system look like telecommunication networks pre-internet. Twenty years ago, the average price to send a text message in Europe was 16 cents per message.³ Now everyone with a smartphone can communicate across the world for free with a basic data plan. Back then, telecommunications prices were high but uniform, whereas today, access to financial services is limited or restricted for those who need it most — those impacted by cost, reliability, and the ability to seamlessly send money.

All over the world, people with less money pay more for financial services. Hard-earned income is eroded by fees, from remittances and wire costs to overdraft and ATM charges. Payday loans can charge annualized interest rates of 400 percent or more, and finance charges can be as high as \$30 just to borrow \$100.⁴ When people are asked why they remain on the fringe of the existing financial system, those who remain “unbanked” point to not having sufficient funds, high and unpredictable fees, banks being too far away, and lacking the necessary documentation.⁵

Blockchains and cryptocurrencies have a number of unique properties that can potentially address some of the problems of accessibility and trustworthiness. These include distributed governance, which ensures that no single entity controls the network; open access, which allows anybody with an internet connection to participate; and security through cryptography, which protects the integrity of funds.



But the existing blockchain systems have yet to reach mainstream adoption. Mass-market usage of existing blockchains and cryptocurrencies has been hindered by their volatility and lack of scalability, which have, so far, made them poor stores of value and mediums of exchange. Some projects have also aimed to disrupt the existing system and bypass regulation as opposed to innovating on compliance and regulatory fronts to improve the effectiveness of anti-money laundering. We believe that collaborating and innovating with the financial sector, including regulators and experts across a variety of industries, is the only way to ensure that a sustainable, secure, and trusted framework underpins this new system. And this approach can deliver a giant leap forward toward a lower-cost, more accessible, and more connected global financial system.

The Opportunity

As we embark on this journey together, we think it is important to share our beliefs to align the community and ecosystem we intend to spark around this initiative:

- We believe that many more people should have access to financial services and to cheap capital.
- We believe that people have an inherent right to control the fruit of their legal labor.
- We believe that global, open, instant, and low-cost movement of money will create immense economic opportunity and more commerce across the world.
- We believe that people will increasingly trust decentralized forms of governance.
- We believe that a global currency and financial infrastructure should be designed and governed as a public good.
- We believe that we all have a responsibility to help advance financial inclusion, support ethical actors, and continuously uphold the integrity of the ecosystem.



Introducing Libra

The world truly needs a reliable digital currency and infrastructure that together can deliver on the promise of “the internet of money.”

Securing your financial assets on your mobile device should be simple and intuitive. Moving money around globally should be as easy and cost-effective as — and even more safe and secure than — sending a text message or sharing a photo, no matter where you live, what you do, or how much you earn. New product innovation and additional entrants to the ecosystem will enable the lowering of barriers to access and cost of capital for everyone and facilitate frictionless payments for more people.

Now is the time to create a new kind of digital currency built on the foundation of blockchain technology. The mission for **Libra is a simple global currency and financial infrastructure that empowers billions of people**. Libra is made up of three parts that will work together to create a more inclusive financial system:

1. It is built on a secure, scalable, and reliable **blockchain**;
2. It is **backed by a reserve** of assets designed to give it intrinsic value;
3. It is **governed by the independent Libra Association** tasked with evolving the ecosystem.

The Libra currency is built on the “Libra Blockchain.” Because it is intended to address a global audience, the software that implements the Libra Blockchain is open source — designed so that anyone can build on it, and billions of people can depend on it for their financial needs. Imagine an open, interoperable ecosystem of financial services that developers and organizations will build to help people and businesses hold and transfer Libra for everyday use. With the proliferation of smartphones and wireless data, increasingly more people will be online and able to access Libra through these new services. To enable the Libra ecosystem to achieve this vision over time, the blockchain has been built from the ground up to prioritize scalability, security, efficiency in storage and throughput, and future adaptability. Keep reading for an overview of the Libra Blockchain, or read the [technical paper](#).

The unit of currency is called “Libra.” Libra will need to be accepted in many places and easy to access for those who want to use it. In other words, people need to have confidence that they can use Libra and that its value will remain relatively stable over time. Unlike the majority of cryptocurrencies, Libra is fully backed by a reserve of real assets. A basket of bank deposits and short-term government securities will be held in the Libra Reserve for every Libra that is created, building trust in its intrinsic value. The Libra Reserve will be administered with the objective of preserving the value of Libra over time. Keep reading for an overview of Libra and the reserve, or read more [here](#).

The Libra Association is an independent, not-for-profit membership organization headquartered in Geneva, Switzerland. The association’s purpose is to coordinate and provide a framework for governance for the

network and reserve and lead social impact grant-making in support of financial inclusion. This white paper is a reflection of its mission, vision, and purview. The association's membership is formed from the network of validator nodes that operate the Libra Blockchain.

Members of the Libra Association will consist of geographically distributed and diverse businesses, nonprofit and multilateral organizations, and academic institutions. The initial group of organizations that will work together on finalizing the association's charter and become "Founding Members" upon its completion are, by industry:

- Payments: **Mastercard, PayPal, PayU (Naspers' fintech arm), Stripe, Visa**
- Technology and marketplaces: **Booking Holdings, eBay, Facebook/Calibra, Farfetch, Lyft, Mercado Pago, Spotify AB, Uber Technologies, Inc.**
- Telecommunications: **Iliad, Vodafone Group**
- Blockchain: **Anchorage, Bison Trails, Coinbase, Inc., Xapo Holdings Limited**
- Venture Capital: **Andreessen Horowitz, Breakthrough Initiatives, Ribbit Capital, Thrive Capital, Union Square Ventures**
- Nonprofit and multilateral organizations, and academic institutions: **Creative Destruction Lab, Kiva, Mercy Corps, Women's World Banking**

We hope to have approximately 100 members of the Libra Association by the target launch in the first half of 2020.

Facebook teams played a key role in the creation of the Libra Association and the Libra Blockchain, working with the other Founding Members. While final decision-making authority rests with the association, Facebook is expected to maintain a leadership role through 2019. Facebook created Calibra, a regulated subsidiary, to ensure separation between social and financial data and to build and operate services on its behalf on top of the Libra network.

Once the Libra network launches, Facebook, and its affiliates, will have the same commitments, privileges, and financial obligations as any other Founding Member. As one member among many, Facebook's role in governance of the association will be equal to that of its peers.

Blockchains are described as either permissioned or permissionless in relation to the ability to participate as a validator node. In a "permissioned blockchain," access is granted to run a validator node. In a "permissionless blockchain," anyone who meets the technical requirements can run a validator node. In that sense, Libra will start as a permissioned blockchain.

To ensure that Libra is truly open and always operates in the best interest of its users, our ambition is for the Libra network to become permissionless. The challenge is that as of today we do not believe that there is a proven solution that can deliver the scale, stability, and security needed to support billions of people and transactions across the globe through a permissionless network. One of the association's directives will be to work with the community to research and implement this transition, which will begin within five years of the public launch of the Libra Blockchain and ecosystem.

Essential to the spirit of Libra, in both its permissioned and permissionless state, the Libra Blockchain will be open to everyone: any consumer, developer, or business can use the Libra network, build products on top of it, and add value through their services. Open access ensures low barriers to entry and innovation and encourages healthy competition that benefits consumers. This is foundational to the goal of building more inclusive financial options for the world.



The Libra Blockchain

The goal of the Libra Blockchain is to serve as a solid foundation for financial services, including a new global currency, which could meet the daily financial needs of billions of people. Through the process of evaluating existing options, we decided to build a new blockchain based on these three requirements:

- Able to scale to billions of accounts, which requires high transaction throughput, low latency, and an efficient, high-capacity storage system.
- Highly secure, to ensure safety of funds and financial data.
- Flexible, so it can power the Libra ecosystem's governance as well as future innovation in financial services.

The Libra Blockchain is designed from the ground up to holistically address these requirements and build on the learnings from existing projects and research — a combination of innovative approaches and well-understood techniques. This next section will highlight **three decisions regarding the Libra Blockchain**:

1. Designing and using the Move programming language.
2. Using a Byzantine Fault Tolerant (BFT) consensus approach.
3. Adopting and iterating on widely adopted blockchain data structures.

“Move” is a new programming language for implementing custom transaction logic and “smart contracts” on the Libra Blockchain. Because of Libra’s goal to one day serve billions of people, Move is designed with safety and security as the highest priorities. Move takes insights from security incidents that have happened with smart contracts to date and creates a language that makes it inherently easier to write code that fulfills the author’s intent, thereby lessening the risk of unintended bugs or security incidents. Specifically, Move is designed to prevent assets from being cloned. It enables “resource types” that constrain digital assets to the same properties as physical assets: a resource has a single owner, it can only be spent once, and the creation of new resources is restricted. The Move language also facilitates automatic proofs that transactions satisfy certain properties, such as payment transactions only changing the account balances of the payer and receiver. By prioritizing these features, Move will help keep the Libra Blockchain secure. By making the development of critical transaction code easier, Move enables the secure implementation of the Libra ecosystem’s governance policies, such as the management of the Libra currency and the network of validator nodes. Move will accelerate the evolution of the Libra Blockchain protocol and any financial innovations built on top of it. We anticipate that the ability for developers to create contracts will be opened up over time in order to support the evolution and validation of Move.

To facilitate agreement among all validator nodes on the transactions to be executed and the order in which they are executed, **the Libra Blockchain adopted the BFT approach by using the LibraBFT consensus protocol**. This approach builds trust in the network because BFT consensus protocols are designed to function correctly even if some validator nodes — up to one-third of the network — are compromised or fail. This class

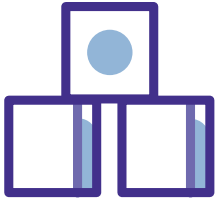
of consensus protocols also enables high transaction throughput, low latency, and a more energy-efficient approach to consensus than “proof of work” used in some other blockchains.

In order to securely store transactions, data on the Libra Blockchain is protected by Merkle trees, a data structure used by other blockchains that enables the detection of any changes to existing data. Unlike previous blockchains, which view the blockchain as a collection of blocks of transactions, **the Libra Blockchain is a single data structure that records the history of transactions and states over time.** This implementation simplifies the work of applications accessing the blockchain, allowing them to read any data from any point in time and verify the integrity of that data using a unified framework.

The Libra Blockchain is pseudonymous and allows users to hold one or more addresses that are not linked to their real-world identity. This approach is familiar to many users, developers, and regulators. The Libra Association will oversee the evolution of the Libra Blockchain protocol and network, and it will continue to evaluate new techniques that enhance privacy in the blockchain while considering concerns of practicality, scalability, and regulatory impact.

For more details, read the [technical paper](#) on the Libra Blockchain. Detailed information is also available on the [Move programming language](#) and the [LibraBFT consensus protocol](#). **We’ve open sourced an early preview of the [Libra testnet](#),** with accompanying documentation. The testnet is still under development, and APIs are subject to change. Our commitment is to work in the open with the community and hope you will read, build, and provide feedback.





The Libra Currency and Reserve

We believe that the world needs a global, digitally native currency that brings together the attributes of the world's best currencies: stability, low inflation, wide global acceptance, and fungibility. The Libra currency is designed to help with these global needs, aiming to expand how money works for more people around the world.

Libra is designed to be a stable digital cryptocurrency that will be fully backed by a reserve of real assets — the Libra Reserve — and supported by a competitive network of exchanges buying and selling Libra. That means anyone with Libra has a high degree of assurance they can convert their digital currency into local fiat currency based on an exchange rate, just like exchanging one currency for another when traveling. This approach is similar to how other currencies were introduced in the past: to help instill trust in a new currency and gain widespread adoption during its infancy, it was guaranteed that a country's notes could be traded in for real assets, such as gold. Instead of backing Libra with gold, though, it will be backed by a collection of low-volatility assets, such as bank deposits and short-term government securities in currencies from stable and reputable central banks.

It is important to highlight that this means one Libra will not always be able to convert into the same amount of a given local currency (i.e., Libra is not a “peg” to a single currency). Rather, as the value of the underlying assets moves, the value of one Libra in any local currency may fluctuate. However, the reserve assets are being chosen to minimize volatility, so holders of Libra can trust the currency's ability to preserve value over time. The assets in the Libra Reserve will be held by a geographically distributed network of custodians with investment-grade credit rating to provide both security and decentralization of the assets.

The assets behind Libra are the major difference between it and many existing cryptocurrencies that lack such intrinsic value and hence have prices that fluctuate significantly based on expectations. Libra is indeed a cryptocurrency, though, and by virtue of that, it inherits several attractive properties of these new digital currencies: the ability to send money quickly, the security of cryptography, and the freedom to easily transmit funds across borders. Just as people can use their phones to message friends anywhere in the world today, with Libra, the same can be done with money — instantly, securely, and at low cost.

Interest on the reserve assets will be used to cover the costs of the system, ensure low transaction fees, pay dividends to investors who provided capital to jumpstart the ecosystem (read “The Libra Association” [here](#)), and support further growth and adoption. The rules for allocating interest on the reserve will be set in advance and will be overseen by the Libra Association. Users of Libra do not receive a return from the reserve.

For more on the reserve policy and the details of the Libra currency, please read [here](#).



The Libra Association

To make the mission of Libra a reality — a simple global currency and financial infrastructure that empowers billions of people — the Libra Blockchain and Libra Reserve need a governing entity that is comprised of diverse and independent members. This governing entity is the Libra Association, an independent, not-for-profit membership organization, headquartered in Geneva, Switzerland. Switzerland has a history of global neutrality and openness to blockchain technology, and the association strives to be a neutral, international institution, hence the choice to be registered there. The association is designed to facilitate the operation of the Libra Blockchain; to coordinate the agreement among its stakeholders — the network’s validator nodes — in their pursuit to promote, develop, and expand the network, and to manage the reserve.

The association is governed by the Libra Association Council, which is comprised of one representative per validator node. Together, they make decisions on the governance of the network and reserve. Initially, this group consists of the [Founding Members](#): businesses, nonprofit and multilateral organizations, and academic institutions from around the world. All decisions are brought to the council, and major policy or technical decisions require the consent of two-thirds of the votes, the same supermajority of the network required in the BFT consensus protocol.

Through the association, the validator nodes align on the network’s technical roadmap and development goals. In that sense, it is similar to other not-for-profit entities, often in the form of foundations, which govern open-source projects. As Libra relies on a growing distributed community of open-source contributors to further itself, the association is a necessary vehicle to establish guidance as to which protocols or specifications to develop and to adopt.

The Libra Association also serves as the entity through which the Libra Reserve is managed, and hence the stability and growth of the Libra economy are achieved. The association is the only party able to create (mint) and destroy (burn) Libra. Coins are only minted when authorized resellers have purchased those coins from the association with fiat assets to fully back the new coins. Coins are only burned when the authorized resellers sell Libra coin to the association in exchange for the underlying assets. Since authorized resellers will always be able to sell Libra coins to the reserve at a price equal to the value of the basket, the Libra Reserve acts as a “buyer of last resort.” These activities of the association are governed and constrained by a [Reserve Management Policy](#) that can only be changed by a supermajority of the association members.

In these early years of the network, there are additional roles that need to be performed on behalf of the association: the recruitment of Founding Members to serve as validator nodes; the fundraising to jumpstart the ecosystem; the design and implementation of incentive programs to propel the adoption of Libra, including the distribution of such incentives to Founding Members; and the establishment of the association’s social impact grant-making program.

An additional goal of the association is to develop and promote an open identity standard. We believe that decentralized and portable digital identity is a prerequisite to financial inclusion and competition.

An important objective of the Libra Association is to move toward increasing decentralization over time. This decentralization ensures that there are low barriers to entry for both building on and using the network and improves the Libra ecosystem's resilience over the long term. As discussed above, the association will develop a path toward permissionless governance and consensus on the Libra network. The association's objective will be to start this transition within five years, and in so doing will gradually reduce the reliance on the Founding Members. In the same spirit, the association aspires to minimize the reliance on itself as the administrator of the Libra Reserve.

For more on the Libra Association, please read [here](#).



What's Next for Libra?

Today we are publishing this document outlining our goals for Libra and launching libra.org as a home for the association and all things Libra. It will continue to be updated over the coming months. We are also open-sourcing the [code for the Libra Blockchain](#) and launching Libra's initial testnet for developers to experiment with and build upon.

There is much left to do before the target launch in the first half of 2020.

- **The Libra Blockchain:** Over the coming months, the association will work with the community to gather feedback on the Libra Blockchain prototype and bring it to a production-ready state. In particular, this work will focus on ensuring the security, performance, and scalability of the protocol and implementation.
 - The Libra Association will construct well-documented APIs and libraries to enable users to interact with the Libra Blockchain.
 - The Libra Association will create a framework for the collaborative development of the technology behind the Libra Blockchain using the [open-source methodology](#). Procedures will be created for discussing and reviewing changes to the protocol and software that support the blockchain.
 - The association will perform extensive testing of the blockchain, which range from tests of the protocol to constructing a full-scale test of the network in collaboration with entities such as wallet services and exchanges to ensure the system is working before launch.
 - The association will work to foster the development of the Move language and determine a path for third parties to create smart contracts once language development has stabilized — after the launch of the Libra ecosystem.

Together with the community, the association will research the technological challenges on the path to a permissionless ecosystem so that we can meet the objective to begin the transition within five years of the launch.

- **The Reserve:**
 - The association will work to establish a geographically distributed and regulated group of global institutional custodians for the reserve.
 - The association will establish operational procedures for the reserve to interact with authorized resellers and ensure high-transparency and auditability.
 - The association will establish policies and procedures that establish how the association can change the composition of the reserve basket.

- **The Libra Association:**

- We will work to grow the Libra Association Council to around 100 geographically distributed and diverse members, all serving as the initial validator nodes of the Libra Blockchain.
- The association will develop and adopt a comprehensive charter and set of bylaws for the association on the basis of the currently proposed governance structure.
- We will recruit a Managing Director for the association and work with her/him to continue hiring for the association's executive team.
- We will identify social impact partners aligned with our joint mission and will work with them to establish a Social Impact Advisory Board and a social impact program.



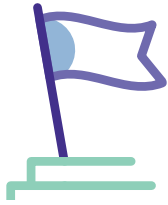
How to Get Involved

The association envisions a vibrant ecosystem of developers building apps and services to spur the global use of Libra. The association defines success as enabling any person or business globally to have fair, affordable, and instant access to their money. For example, success will mean that a person working abroad has a fast and simple way to send money to family back home, and a college student can pay their rent as easily as they can buy a coffee.

Our journey is just beginning, and we are asking the community to help. If you believe in what Libra could do for billions of people around the world, share your perspective and join in. Your feedback is needed to make financial inclusion a reality for people everywhere.

- **If you are a researcher or protocol developer**, an early preview of the [Libra testnet](#) is available under the Apache 2.0 Open Source License, with accompanying documentation. This is just the start of the process, and the testnet is still an early prototype under development, but you can read, build, and provide feedback right away. Since the current focus is on stabilizing the prototype, the project may initially be slower to take community contributions. However, we are committed to building a community-oriented development process and opening the platform to developers — starting with pull requests — as soon as possible.
- **If you want to learn about the Libra Association**, read more [here](#).
- **If your organization is interested in becoming a Founding Member or applying for social impact grants from the Libra Association**, read more [here](#).

The association will work with the global community in the coming months and continue to partner with policymakers worldwide to further the mission.



Conclusion

This is the goal for Libra: A stable currency built on a secure and stable open-source blockchain, backed by a reserve of real assets, and governed by an independent association.

Our hope is to create more access to better, cheaper, and open financial services — no matter who you are, where you live, what you do, or how much you have. We recognize that the road to delivering this will be long, arduous, and won't be achieved in isolation — it will take coming together and forming a real movement around this pursuit. We hope you'll join us and help turn this dream into a reality for billions of people around the world.

¹ Best Buy. "AT&T prepaid Alcatel CAMEOX device purchase." Bestbuy.com. Available: <https://www.bestbuy.com/site/at-t-prepaid-alcatel-cameox-4g-lte-with-16gb-memory-cell-phone-arctic-white/6008102.p?skuld=6008102> (Accessed: May 15, 2019).

² A. Demirgüç-Kunt, L. Klapper, D. Singer, S. Ansar, and J. Hess. The Global Findex database 2017: *Measuring financial inclusion and the fintech revolution*. World Bank Group, 2018. Accessed: May 15 2019. Globalfindex.worldbank.org. [Online]. Available: https://globalfindex.worldbank.org/sites/globalfindex/files/2018-04/2017%20Findex%20full%20report_0.pdf

³ OECD. *Mobile phones: Pricing structures and trends*. Paris, France: OECD Publishing, 2000, p. 67. [Online]. Available: https://books.google.com/books?id=p-cP84M_GBeoC&pg=PA6&lpg=PA6&dq=1999+price+SMS+europa&source=bl&ots=TLbwgZWCmj&sig=ACfu3U2Z_yRawxW78qVSVO_wHCtRupoqoA&hl=en&sa=X&ved=2ahUKEwjOmeG9tMHIAhVVFzQIHU8eBEMQ6AEwD3oECAkQAQ#v=onepage&q=SMS&f=false

⁴ Consumer Federation of America. "How payday loans work." Payday Loan Consumer Information. Available: <https://paydayloaninfo.org/facts> (Accessed: May 19, 2019).

⁵ A. Demirgüç-Kunt, L. Klapper, D. Singer, S. Ansar, and J. Hess. The Global Findex database 2017: *Measuring financial inclusion and the fintech revolution*. World Bank Group, 2018. Accessed: May 15 2019. Globalfindex.worldbank.org. [Online]. Available: https://globalfindex.worldbank.org/sites/globalfindex/files/2018-04/2017%20Findex%20full%20report_0.pdf