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—LUDOVICO RELLA, DURHAM UNIVERSITY

plans instead to use free person-to-person transfers to build up its user base, before branching out to become a more general payment provider and making money on merchant fees.

The company’s ultimate goal is probably to create a super app in the mold of China’s WeChat, says Maynard, which has managed to combine both social and payment features in one place. And while marrying this with a home-grown cryptocurrency might reduce its processing costs, the real ambition is to become the main payments intermediary for its enormous global user base. “You don’t need the cryptocurrency to do that. Having the wallet will do all of that for you,” says Maynard.

That might be easier said than done though. Getting merchants to accept new payment methods is notoriously challenging, says Maynard, as you not only need to demonstrate that large numbers of people want to use them, but also that you can provide the same kind of fraud-prevention and dispute-resolution services they’re used to from traditional players.

Even with Facebook’s massive user base, that will take a long time, says Maynard. And it’s far from clear that people drawn in by cheap remittances will also use the app for everyday payments, particularly when they have to be made in cryptocurrency rather than local currency.

Running a free global remittance service for potentially millions of users is also an expensive way to build up your user base, says Maynard. He suspects the company may take a similar approach to other cross-border payments services that offer free transfers, but then make money on less-than-favorable exchange rates.

“Does Facebook have deep enough pockets to do this as a pure loss leader?

Yeah, of course they do,” says Maynard. “But fundamentally I don’t think they could create it on a massive scale outside of a pilot without having some kind of monetization.”

Novi’s targeting of remittances could also hint at a deeper goal, says Ludovico Rella, a research associate at Durham University, in England. In certain corners of the tech industry there is an attitude that the Global South represents an empty space where first movers can easily install themselves as the predominant intermediary for everything from

payments to Internet connectivity.

“Being the first mover is more important than revenue itself because it’s a matter of becoming the infrastructure, the rails on which data and money flows,” says Rella. Facebook was accused of doing exactly this when it tried to set up a free but restricted Internet service in India called Free Basics.

If Novi can collect comprehensive data on the financial behavior of its users, it could allow the company to provide other financial services such as credit and insurance, says Rella. And while the company has committed not to share individual’s financial information with Facebook’s advertising business or third parties, Rella says it could still use analysis of aggregate data from many users to fine-tune its highly lucrative targeted advertising business.

“It will be interesting to see how the promises and the public statements of Facebook will square with the business model they decide to adopt,” says Rella.

Facebook did not respond to an interview request. ■

JOURNAL WATCH

Could Starlink Be a Backup GPS?

If GPS systems went down or were hacked tomorrow, the disruption to so many critical operations across the globe would be catastrophic, costing some countries more than US \$1 billion a day.

“There is an urgent need to find an alternative robust and accurate navigation system to GPS,” says Zak Kassas, an associate professor of electrical engineering and computer science at the University of California, Irvine.

Fortunately, Kassas and his UC Irvine colleagues have devised an approach that harnesses the more abundant and closer-to-home satellites in low Earth orbit, such as the Starlink fleet of Internet satellites operated by SpaceX.

His team’s new approach uses a receiver on the ground that tracks the phase of the underlying carrier wave emitted by a low-orbiting satellite. They developed an algorithm that then calculates the ground receiver’s position, velocity, and time in relation to the LEO satellites above.

“They are about 20 times closer to Earth than GPS satellites, which means we receive their signals at considerably higher power than that of GPS. This makes them more difficult to jam or spoof and makes them reliable in environments where GPS signals are not,” explains Kassas.

In the spring of 2021, the researchers successfully used six Starlink satellites to track their position accurately within just 7.7 meters. The results are described in a study published recently in *IEEE Transactions on Aerospace and Electronic Systems*.

—Michelle Hampson

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