

FinTech for Inclusion:  
**Roadmap for Collaboration  
in the Age of Web 3.0 and AI**

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June 2023 June 2023





## Foreword

Attending the inaugural [Inclusive Fintech Forum](#) (IFF) <sup>[1]</sup> in Kigali on June 20-22, 2023, was an incredible privilege. Organized by Elevandi and Kigali International Financial Center (KIFC), it is an excellent platform for financial inclusion and FinTech for good. From a Latin America and the Caribbean (LAC) perspective, it was inspiring to see Africa's advancement towards fostering FinTech for good and better understanding the differences in the development of capital markets in each region.

In this paper, I aim to articulate the critical insights from the IFF and elaborate on the exciting opportunities that recent internet and technology development trends create for financial inclusion and innovation in general. To convey these ideas, the paper is structured as follows. First, I present the vision that we have developed at [IDB Lab](#), the innovation and venture capital arm of the Inter-American Development Bank Group (IDB Group), regarding the **Internet's evolution over the past 30 years, leading up to what we know as Web 3.0** to provide context. Second, I share the **main insights from the IFF** and briefly explain the **importance of these trends for the development of FinTech solutions for good** and to deepen financial inclusion in emerging markets while complying with regulations. Finally, I offer a **roadmap to contribute to the advancement of this sector** for the development of an inclusive FinTech industry.



# Introduction

**The evolution of the web from Web 1.0 to Web 2.0 and now to Web 3.0 has revolutionized the digital landscape and transformed how we interact, communicate, and harness technology.** Given its transformative capacity, **we must acknowledge technology’s importance to build a more humane and inclusive society.** This transformation is very true across sectors, and even **more apparent for financial inclusion.**

Web 1.0 represented the early days of the Internet, characterized by static web pages and limited user participation through “basic computers” that essentially allowed us to read information.

With the advent of Web 2.0, the web became more dynamic, interactive, and social, allowing user-generated content, social networking platforms, and online collaboration. Web 2.0 empowered individuals to connect, share, and create unprecedentedly. Of course, this evolution would not have been possible without an **exponential improvement in connectivity and increased information storage systems, which enabled the development of “smartphones” as personal tools for interaction** on the social web.

Within the framework of this Web 2.0, during the early years of the 2000s, the first Fintech platforms related to lending and equity emerged in the United States, such as Prosper<sup>[4]</sup> or LendingClub<sup>[5]</sup>, which later inspired crowdfunding, crowdlending-based financing and marketplace models, seeking to meet the needs of populations lacking financing services.



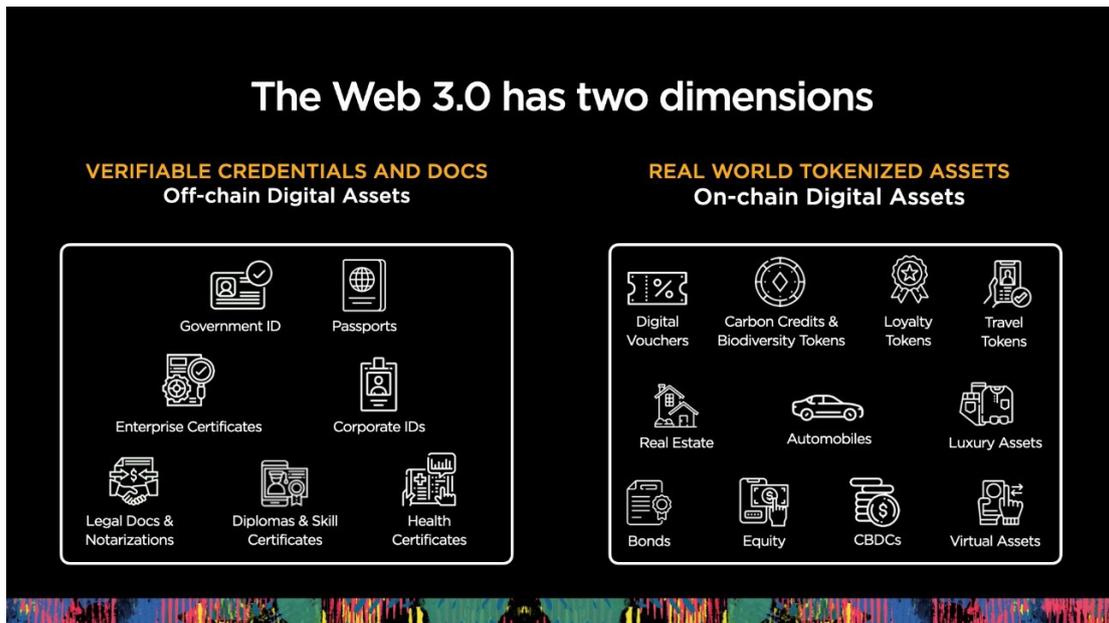
## A new generation of platforms is emerging

Web 1.0	Web 2.0	Web 3.0
Basic Computers	Smartphones	Digital Wallets
Read	Read + Write	Read + Write + Own
The "static" Web	The "social" Web	The "tokenized" Web

**The third wave in the evolution of the web, known as Web 3.0, goes a step further in decentralization and autonomy. It uses decentralized networks for anyone to build on top (programmable, composable, portable), and it incorporates artificial intelligence and enhanced personalization.** Web 3.0 aims to create a smarter, safer, and more immersive web experience, leveraging technologies such as machine learning, blockchain, and the Internet of Things (IoT), enriching the power of digital assets and distributed ledger technologies.

**This Web 3.0 allows us to manage digital wallets through which we store and share digital assets,** some of which originated within distributed ledger networks. In contrast, others digitally represent objects, goods, documents, or existing rights in the non-digital world to facilitate their traceability and programmability.

**Web 3.0 presents two dimensions:** on the one hand, **verifiable credentials and digital assets created using cryptography outside of distributed ledger networks,** such as government IDs, passports, digital health certifications, driver's licenses, corporate IDs, and diplomas. On the other, **assets whose birth might originate from the tokenization process in a distributed network** for circulation and distribution, such as Central Bank Digital Currencies (CBDCs - although not all CBDCs are based on blockchain such as JAM-DEX), Carbon Credits and Biodiversity Tokens, bonds, real estate, and virtual assets, among others.



**Web 3.0 can potentially revolutionize financial inclusion by providing a decentralized and accessible platform for individuals worldwide.** It can overcome barriers such as high transaction fees, lengthy processing times, and policies that disproportionately affect marginalized communities. By leveraging smart contracts and cryptocurrencies, Web 3.0 enables peer-to-peer transactions, eliminating intermediaries and reducing costs. This technology empowers individuals without access to traditional banking services to participate in the global economy and engage in secure, transparent, and efficient financial transactions. With Web 3.0, individuals can securely store and manage their digital assets, access loans, and credit leveraging traditional credit scoring mechanisms, and participate in decentralized lending and borrowing protocols. This democratization of financial services has the potential to uplift underserved populations, bridge the economic divide, and foster inclusive economic growth. **By embracing Web 3.0 technologies, we can pave the way for a more inclusive and equitable financial landscape, empowering individuals worldwide to access and participate in the global financial system like never before.**

However, such decentralization shall not be seen as a threat to traditional financial institutions but rather as an opportunity. Web 3.0 solutions do not aim to replace or displace the technological advancements and developments that regulated entities, central banks, and regulators have implemented. On the contrary, the incorporation of **Web 3.0 solutions seeks to bring about greater efficiencies that can enhance security and reduce costs in downscaled models of regulated financial services for SMEs and underbanked or low-banked populations.**



**LACCHAIN**  
Global alliance for the development of the blockchain ecosystem in LAC

**LACNET**  
A neutral blockchain infrastructure orchestrator for LAC

**+8M** People benefited  
**+80** Solutions on top  
**12** Global recognitions and awards

**+1K** Entities part of the ecosystem  
**133** Entities with nodes deployed  
**13** Countries developing ecosystem

**Validated network** for enterprise solutions in a production environment  
**Eliminating costs** per transaction, key to scalability  
**Open-source technology + complementary tools** are available

**Guaranteed level of service and support, unique globally**  
**Eco-friendly network** CO<sub>2</sub> footprint is near to zero

**THE MAINNET - WEB 3.0**  
First enterprise, multipurpose, public permissioned, blockchain network in production

**In this fast-evolving world, each ecosystem player has a role but needs an open mindset to adapt to the pace and different transformations we face.** Governments and multilateral entities like IDB Lab, can foster innovative models to develop interoperable solutions within a harmonized and standardized framework and enable rails of digital infrastructure. Singapore has been at the forefront of such developments for years, and India, increasingly Africa<sup>[2]</sup>, also lead by example. In the case of LAC, the [LACChain](#) blockchain network, operated by [LACNet](#), as a neutral and non-profit entity in Uruguay, offers solutions in line with regulation that can enable digital identity end-to-end for secured transactions and the use of verifiable credentials that can unlock value particularly for those previously excluded from the financial system. Digital public goods also include common payment rails, basic cross-border connectivity, collaboration to drive innovation, and common platforms for human collaboration like the IFF or the [IDB Lab Forum](#) recently held in Bogota, Colombia.



# Key Insights

**We have seen how technology shapes the world that we live in. And to build a more humane and inclusive society, we must acknowledge its utmost importance.** But technology can be a double edge sword. Working collaboratively, funding innovators, and enabling them to scale is essential to harness the opportunities of new business models and technology opportunities. However, we must manage new technology's risks and set the proper guardrails to ensure the solutions are technically solid, reasonably scalable, and viable considering the local economic, regulatory, and political context.

Reflecting on the [Capital Meets Policy Dialogue™](#) discussions during the IFF on what venture capital requires from financial policymakers, and the subsequent session on Reimagining Capital Market Infrastructure for Emerging Markets, it is evident that we are about to see a significant transformation in capital markets.

After all, the beginnings of capital markets were inspired by creating mechanisms that would allow companies and entrepreneurs to access financing and expand liquidity by attracting investors capable of assuming differential levels of risk. In the last 30 years, both banking and the stock market have explored multiple mechanisms to make their services more accessible and to efficiently reach small and medium enterprises (SMEs) and micro-entrepreneurs, with limited success. This challenge can now be addressed through FinTech solutions with financial inclusion and expanded services as their central objective.

I present the key insights that emerged from the collective conversation at the IFF, articulated in the form of themes.

- a. Web 3.0 holds great potential to accelerate financial inclusion and innovation but requires innovation infrastructure to succeed.**



Discussing Web 3.0<sup>[3]</sup> in achieving inclusive fintech solutions in the Global South is critical. Primarily, because it is part of the **necessary technological and innovation infrastructure to develop secure and robust solutions**. But that is only part of the equation. These Web 3.0 solutions need foundations, such as high-speed internet connectivity, data centers, cloud computing infrastructure, communication networks, cybersecurity systems, and hardware devices. As mentioned in the introduction, the development of Web 3.0 implies the creation of a robust technological innovation infrastructure through the necessary technological components to deploy and offer digital services that ensure security and transparency for users, regulators, companies, and governments on a global scale. In a broader sense, **innovation infrastructure also encompasses policies, frameworks, and resources that foster an enabling environment for developing, adopting, and scaling innovative solutions**. The development of infrastructure and other necessary conditions for Web 3.0 includes initiatives such as research and development programs, incubators, accelerators, funding mechanisms, supportive regulatory frameworks, and collaboration platforms, and of course having basic connectivity and digital infrastructure. Innovation infrastructure aims to facilitate the creation, testing, and deployment of new ideas and technologies across various sectors and industries, including the FinTech sector.

**b. Multistakeholder engagement for regulatory harmonization is vital to foster global FinTech solutions.**

**Harmonizing the efforts of the technology community with the vision of policymakers, regulators, central banks, financial operators, and end users is not an easy task, as it represents a challenge in the current transition of our society.** This transition must be approached with due responsibility and prudence. Regulators will regulate activities that entail systemic risks, affect competition or consumer protection rights. As the market evolves, regulators are stepping in at different paces to regulate the new reality. Issues related to remittances, international aid, and automation in subsidy programs, to name just a few, are central to the problems that must be addressed through inclusive FinTech solutions. In most cases, these issues are developed in cross-border environments that require greater integration and harmonization of legal and regulatory aspects. This is why regulatory harmonization should be part of our discussions and work agendas, in close collaboration between the public and private sectors.



**c. Talent as capital.**

**Implementing new technologies in capital markets can allow our countries to access new sources of capital, thanks to the security and transparency offered by distributed ledger technologies (DLT),** both for secure monitoring of operations and for simplifying and introducing efficiencies in payment, custody, and settlement processes. **Similarly, talent development and knowledge dissemination in a collaborative environment are essential.** This can enable regulators, governments, the private sector, and universities to work collectively to reduce the current gaps in talent and knowledge generation in our countries.

**d. Sharing knowledge and building public goods.**

Advancements in fintech for good efforts requires ample collaboration, and we need to develop common 'highways' and build on each other's knowledge. It was great to confirm the importance most players place on building digital public goods to facilitate FinTech for good and how we can share knowledge to build on each other's progress by 'bundling' different functionalities. For example, at IDB Lab, we share with many of the partners we met our common interests and goals on self-sovereign identity (SSI), blockchain and Web 3.0, and quantum computing, which organizations like the BIS are implementing too (for example through the FuSSE infrastructure (essentially a middleware) that they are building for central banks to improve their national settlement systems. However, there is an excellent opportunity for international settlement between bank accounts where escrows are needed, and blockchain is ideal. We have a chance to develop a common end-to-end infra where, for example, FuSSE is integrated with LACChain so Central Banks can test national and international settlement and enable, for example, post-quantum cryptographic algorithms for encryption and signature.

**e. Data will fuel the Web 3.0 revolution. But it requires a fit for purpose governance arrangement.**

The demand for tools and the capacity to manage data and adapt it to AI models and other interventions will be high in the coming years. Therefore, we must learn about data management and rights from different countries and establish the necessary infrastructure within the tech stack.



## **Roadmap to Use Web 3.0 and Innovation to Foster FinTechs and Drive a More Inclusive Financial System**

**Innovation and technology will play a pivotal role in democratizing access to affordable capital in the coming years and, for that to happen, we need to work collaboratively across institutions and think ‘in systems’.**

What does this mean? It means that we can't work in silos or support 'point solutions' that will either remain small because they lack the right conditions to thrive or will grow unregulated, challenging market integrity, financial stability, and consumer protection, amongst other risks. Decentralized finance and Web 3.0 do not mean deregulation. Some critical elements of Web 3.0 are taking hold (such as stable coins). Therefore, we need to have a vision to: (1) tackle, based on shared principles and proportionality, the **policy and supervisory technology ('sup-tech')** needed; (2) put in place the key building blocks of **digital infrastructure and the talent required**, and (3) promote the **investment** (particularly venture capital) needed to support the innovative FinTechs which can build solutions on top of these new 'rails'.

***For the first and second components, the following actions are key:***

- **Standardization and harmonization.** At the closed roundtable, chaired by the two Governors of Singapore and Rwanda with five additional governors, deputy governors, and ministers from the region explored the topic of rethinking licensing to promote #FinTech for good. African regulators are far ahead compared to LAC in considering common standards for FinTechs and digital assets with an activity-based approach. They did not get there straight away. They had to build sound national systems based on common principles after testing other approaches like imposing FinTechs to operate only through banks or to be part of the switch from day one (instead of only after reaching a certain scale). Other regulators like the Central Bank of West African States (BCEAO) could avoid going through the same lengthy road, and these lessons could also apply to many countries in Latin America and the Caribbean. After all, **what is a key ingredient of effective innovation? Don't be afraid to make mistakes but... avoid making the same mistakes twice. Sharing common principles and past experiences is therefore key.**
- **Knowledge sharing and experimentation as digital public goods.** Sharing knowledge and building on each other's achievements and learnings (e.g., from our experience in LAC regarding the development of the FinTech industry and Web 3.0 infrastructure with partners from the US, Europe, Asia, and Africa) is a needed step towards understanding the significance of this opportunity and the necessity to work together to



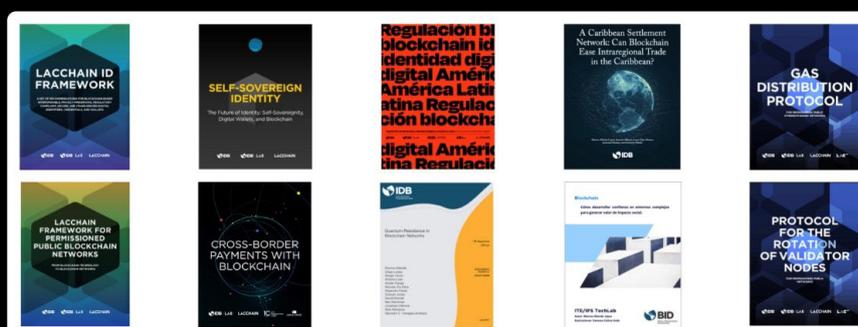
foster it. Creating shared infrastructures for testing and responsibly deploying innovations is crucial for developing shared knowledge and advance the field. One possibility is to **collaborate designing multi-sector sandboxes to promote innovation and collaboration: open spaces for testing new models while managing the risks inherent to these innovations.** This would enable sharing expertise and knowledge to promote FinTech for good, the cross-border expansion of FinTech by re-designing licensing frameworks based on common principles as Central Banks in Zambia, Uganda, Kenya, and Tanzania are doing. Developing knowledge products and research that capture lessons learned and provide detailed explanations of the products for publication and dissemination is also key. In this regard, at IDB Lab, we have made significant contributions to publications that document the work and components of Web 3.0 developed within the LACChain framework in hopes of promoting adoption by other organizations that share the ambition to advance FinTech for good.

- **Fostering a data culture across market segments under the proper data governance and management frameworks.** Capturing data, building common data platforms, and building the capacity of end users (SMEs, individuals) to manage and 'own' their data, and decide who and how to share it with are essential steps to open access to new services or make existing ones more affordable and convenient. While discussions about AI are buzzing, we need to act responsibly today to ensure that legacy AI data does not shape the future of developing countries in the years to come. Along these lines, at our recently held IDB Lab Forum, a local attendee emphasized the importance of including traditional knowledge in AI datasets. There will also be questions regarding the traditional Environmental, Social and Governance (ESG) Performance Standards of consent and compensation for the use of this knowledge, as it incorporates the technology dimension. This applies across developed and emerging markets, and we are tackling this partly through the tools of fAIr LAC, the largest regional alliance for ethical and responsible use of technology. Nevertheless, more joint action is required as we prepare for -and hopefully contribute to inform- new regulations for the development of AI.



## Knowledge products documenting the work and components of Web 3.0 developed within the LACChain framework

<https://www.lacchain.net/academic-publications>



- **Building talent.** Based on our experience, the development of talent for establishing an inclusive FinTech industry needs to address three dimensions: (i) Investment and the development of *programs for training developers, regulators, and finance professionals*, with an understanding of the requirements involved in regulated digital financial solutions. Programs such as those promoted by [CFTE](#) and [Elevandi's Digital Assets and Sustainability Certification Program](#) are great examples of this; (ii) Investment and the development of *programs that enable the acceleration, mentoring, and financing of digital solutions* that integrate with financial systems and emerging digital public goods, both in the financial sector and in climate-related investment; (iii) Investment and the *development of digital capabilities and competencies in the population at large* for the appropriate use and access to digital media, as proposed in the European Union through DIGCOMP.

**To tackle the third component (attracting investment), the following actions are key:**

- **Convey a shared and meaningful motivation.** First, it's important to **understand the 'why'**: Why are we promoting the development of a given fintech or Web 3.0 enabled solution in the first place? What use cases are technically sound, politically, contextually feasible, and scalable? We are promoting a **more inclusive financial system to go beyond the most superficial aspects of the booming app economy**. It is great to see companies like GoPuff in the US providing convenient services, such as ensuring that if you are on Miami Beach and forgot your sunscreen at

home, you can call someone to deliver it to you in less than 10 minutes. However, our focus is on making fundamental improvements in people's lives. Here are some of the various categories and examples that came up during the IFF:

- **Collaborate to address the SME finance gap.** At IFF, I heard one of the most pragmatic and forward-looking discussions about this overly debated yet poorly addressed financing gap in our economies<sup>[6]</sup>. We all know that SMEs often represent over 80% of the firms in emerging markets, over 60% of the employment, and have tremendous difficulty accessing financing to grow their businesses. Part of the reason so many previous attempts to address this gap have failed is that it is hard to address it from all angles. It can be daunting. So, how do you chew this "elephant"? A bite at a time and leveraging data and technology with multiple like-minded and complementary partners. During IFF, Aiaze Mitha (UNDP, Lead for digital finance and SDGs), Claire Rowley (Global Legal Identifier Foundation) and Sopnendu Mohanty (Chief Technology Officer of the Monetary Authority of Singapore, MAS) signed the Savannah Project to bring more SME sustainable finance at affordable terms. On the spot, we were able to identify that IDB Lab can add two important pieces to solve this puzzle, together, namely: (i) help SMEs structure and use their data via our [data economy project](#) and (ii) help SMEs build and monetize verifiable credentials since we are building this layer on the network of [LACChain](#).
- **Create networks for scale.** It's vital to **connect startups and VC ecosystem players from across countries**, particularly South-South, to accelerate the pace of scalability. Innovation is 'global-local'; by building closer networks across regions, we can avoid duplication, prevent making the same mistakes twice, and take advantage of the composability of open-source tech stacks. I was impressed at the success of MFS (the largest e-wallet in Africa) and how KIFC can partner with us at IDB Lab to promote knowledge sharing and JVs between startups across both regions that understand their respective local markets, are tackling similar issues, and can benefit from each other's strengths.
- **Enable various models for more predictable startup funding.** Combining global and local debt and equity funding for startups is important. As we have seen in most markets during the so-called "VC winter" VC funding significantly shrank in the high inflation and high interest rate macro environment. This reduction hit emerging markets particularly hard because of the withdrawal to "safety" of developed market investors. In Latin America and the Caribbean, funding dropped from close to \$16 billion in 2021 to less than a third of that in 2022 and 2023. Domestic capital and funding from multilateral organizations that can catalyze private capital can ensure more predictable startup funding. Successful founders who start their funds are also vital to driving startup funding, particularly for smaller emerging ecosystems. For example, Centro, a new



VC fund in Central America co-founded by the successful entrepreneurs from Hugo Technologies ([acquired by Delivery Hero](#) in October 2021). The connections made during IFF can help us bring together better models to raise local funding, for example, from family offices which often face similar barriers entering the VC market in emerging markets.

## Conclusion

**The increasing pace of innovation, the development of the Web 3.0 industry and the emergence of decentralized financial models call for collective action to lay the right foundations from a policy, regulatory and infrastructure point of view.**

This paper has elaborated a vision on how recent technological developments in Web 3.0 and artificial intelligence can help us radically advance the agenda of financial inclusion and innovation in this field. With this objective in mind, I briefly introduced the three waves in the development of the Internet and elaborated on why I believe that the last wave, the Web 3.0, presents a unique opportunity to achieve greater impact on financial inclusion.

The introduction provides context to a **series of insights that emerged from the collective conversation during the IFF 2023**. I present these insights as themes to aid their understanding. The paper conveys that while there is room for traditional and non-traditional players, **if we want to build a more sustainable and humane society, we need cross-border public-private action to encourage proportionality and harmonization in regulatory frameworks and avoid fragmentation and arbitrage, build common infrastructure in accordance with regulation, attract investment to overcome the high concentration in sectors and countries we see today, and ensure we build the necessary talent.**

Finally, **I contribute a roadmap that identifies actions to deliver on those themes and orchestrates a global and collective action in pursuit of a new agenda for financial inclusion in the age of Web 3.0**. These actions are aimed to (1) tackle, based on shared principles such as activity-based regulation and proportionality, the policy and supervisory technology needed; (2) put in place the key building blocks of digital infrastructure and the talent required, and (3) promote the investment (particularly venture capital) needed to support the innovative FinTechs which can build solutions on top of these new and promising innovation infrastructures.

This list of actions may seem daunting, particularly because there is no silver bullet and they need to be adapted to each local context, but to contribute to the advancement of an inclusive fintech industry we can propose three concrete ways forward:



1. Set up a working group to bring to life Web 3.0 finance for everyday use.
2. Co-invest to develop a single interoperable protocol for digital wallets.
3. Co-invest on common standards and a common platform for asset tokenization and CBDCs.

<sup>[1]</sup> I would like to thank Albi Rodriguez Jaramillo for his contribution to this paper and to the Elevandi and Kigali International Finance Center team for inviting and hosting me during IFF.

<sup>[2]</sup> For example, the Pan-African Payment and Settlement System (PAPSS) and the African Continental Free Trade Agreement (AfCFTA) protocol on digital trade are good examples of cross-border initiatives.

<sup>[3]</sup> Web 3.0, sometimes known as Web 3, is the concept of the next generation of the web, in which most users will be connected via a decentralized network and have access to their own data.

<sup>[4]</sup> <https://www.prosper.com/>

<sup>[5]</sup> <https://en.wikipedia.org/wiki/LendingClub>

<sup>[6]</sup> Session on "Launch of Project Savannah: Digital ESG credentials for MSMEs to access sustainable financing and global supply chains.", IFF, June 22, 2023.

