

Investor Update

Venture Fund
2021-2022



3 Executive Summary

8 Section 1: The Overview

9 Introduction: the UNICEF Venture Fund

10 Strategic Focus of for 2021-2022

11 Key Results for 2021-2022

18 Section 2: Accelerating Solutions and Results for Children

19 Increasing the number of new innovations that accelerate results for children

23 Shaping emerging technologies to accelerate results for children

34 Diversifying funding flows and building new communities of problem solvers in UNICEF Programme Countries

36 Innovating new Fund practices and adapting to the evolving digital fiance landscape

38 Section 3: New Frontiers for the Fund

46 Appendix

Executive Summary

With inequities growing acutely worldwide, delivering on the SDG targets and delivering for children urgently demands innovative problem-solving strategies outside pre-existing structures. While COVID-19 slowed down the pace of development, the challenges COVID-19 presented also created a unique context for many technology and innovation trends to accelerate. It presents an opportunity we must seize to think differently and ensure the digital revolution closes equity gaps for children rather than widens them.

As of November 2021, the UNICEF Innovation Fund was renamed **UNICEF Venture Fund**. In this report, the Fund is referred to as UNICEF Venture Fund

To this end, the **UNICEF Venture Fund** is building on its track record of action and engagement with the tech industry. The Fund is tracking emerging trends and identifying new areas for exploration, technologies, and applications of technology that can support UNICEF's programmes through investments in startups and Country Office projects. The purpose is to make early-stage investments into new solutions and foster them to become fundamental Open Source platforms that can be used for multiple purposes.

This report covers the high-level priorities and outcomes in 2021/2022, provides a deep dive into how solutions are accelerating results in UNICEF programme countries, and reflects on the learnings from the past year and priorities going forward.

In the past year, the Fund has:

- Invested in locally developed solutions from emerging and developing markets. In 2021-2022, the Fund made **69 investments in early-stage startups, 12 investments in growth-stage solutions, and 55 investments in UNICEF Country Offices**. In total, reaching **74 countries** globally. This work includes exploring blockchain to improve financial inclusion and leveraging big data to ensure access to and delivery of services for every child.

In addition to providing this seed funding to the very exploratory stage, **in December 2021, the Fund launched its growth funding strategy** to accelerate innovations and directly support country offices to use these solutions for their programmes. The 12 companies that received growth funding, will scale to **25 new countries** over the funding period – all through the close collaboration with UNICEF Country Offices. One such example is Thinking Machine, a data intelligence platform from

Total beneficiaries are estimated by calculating total direct (paid and unpaid users) and indirect (infrequent user or positive affect as a result of the user's access to the technology such as a Teacher (user) and student (indirect beneficiary) or parent (user) and child (indirect beneficiary)) users of Fund portfolio solutions

the Philippines, a company that is working to scale across 9 countries in Southeast Asia.

- Reached a total of **31.7 million beneficiaries** across several industries. We are shifting the global balance and supporting entrepreneurs and technologists in emerging markets, especially female leaders. Our portfolio is now comprised of **43% female founders** and we're working hard to ensure we reach our goal of 50%.
- Diversified funding flows and has driven private capital towards innovations for children – **80% of the companies in our portfolio generate revenue** and have **raised over USD \$27.7 million dollars** of investment after our seed funding.
- Evolved new practices – **the first of its kind, and the only mechanism in the UN system that can hold or disburse cryptocurrency** (currently, Ether and Bitcoin). This year, the CryptoFund disbursed **732.5 ETH + 3.13 BTC**, and **supported 21 projects**. We're working with various divisions across the organisation with the goal of institutionalising the CryptoFund, as its prototype period comes to an end in December this year.
- Built a pipeline of vetted Open Source solutions that are more scalable, more adaptable, and accessible. From the Fund's portfolio, **10 solutions have been vetted as Digital Public Goods (DPGs) and another 24 are DPG nominees** representing a significant pipeline of solutions for the Digital Public Goods Alliance's registry across the SDGs.

Complementing the innovation portfolio management strategy, the UNICEF Venture Fund is one of the key vehicles for the Office of Innovation to meet the complex, interconnected demands and explore the space of emerging solutions. Over the past year, there has been greater alignment in the thematic focus of the Fund and nine portfolios and hubs. The core motivation of the Fund remains identification of "clusters" or portfolios of initiatives around emerging technology - so that UNICEF can both shape markets and also learn about and guide these technologies to benefit children.

69

Early-stage startup
investments in 2021-2022

55

UNICEF Country Office
investments in 2021-2022

12

Growth-stage startup
investments in 2021-2022

VENTURE FUND METRICS TO DATE

31.7M

Beneficiaries of Venture Fund
portfolio solutions

80%

Portfolio companies that
generate revenue

74

Countries with a portfolio
company presence

\$27.7M

Follow-on funding raised after
Fund investment

43%

Portfolio companies that are
female-founded

DPG EFFORTS

24

Portfolio companies that are
certified Digital Public Goods

10

Portfolio companies that have
been vetted as Digital Public
Goods

CRYPTOFUND METRICS

21

Solutions that received
investment from the CryptoFund

732.5 ETH
+ 3.13 BTC

Crypto dispursed by Fund

Expression of Thanks

As the world recovers from COVID-19, there is a critical need to identify and rapidly scale up transformational solutions to improve the lives of children. The Venture Fund is very proud to have long-standing leadership and bold commitment from its partners. This support has over the years positioned the Office of Innovation at the cutting edge of innovation for children and as a leader within the public sector.

The Venture Fund would like to take this opportunity to express its sincere appreciation to the Governments of Denmark, Estonia and Finland, Animoca Brands, Chainlink, Ethereum Classic Labs, the Ethereum Foundation, Huobi Charity, Kirill Tatarinov, and Takeda Pharmaceutical Company Limited for their generous contributions.

The Overview



Introduction: the UNICEF Venture Fund

The COVID-19 pandemic led to widespread adoption of technology, creating a rapid expansion of digital programming. This was also evidenced by the acceleration and uptake of digital solutions employed by countries at scale. At the same time, the pandemic cruelly exposed the scale of social, structural, and technological inequities that exist globally – leaving those without access even further behind and excluded. School closures affected 1.6 billion children worldwide while the transition to remote learning revealed a world moving toward a digital future, while leaving 2.2 billion children and young people without internet access at home.

Digital adoption has taken a quantum leap, however even when the right digital solutions exist, they are often inaccessible and locked into proprietary intellectual property regimes. The benefits are kept out of reach for those who need them the most – which creates a growing divide, a digital divide. Furthermore, solutions are often designed in few markets based on the needs of few users – neglecting the needs of a diverse, global community. Financing for technology and the value that digital solutions can generate, is largely generated, and captured by few countries and few companies, creating more layers of inequity.

The UNICEF Venture Fund therefore continues to not only identify and test new solutions that accelerate results for children but also aims to challenge and redefine the unbalanced flow of resources and value, that are leading to the development of solutions of little social value, limited applicability in developing markets and excluding a diverse community of innovators to partake in the global digital market.

Over the past two years, the role of the Fund as an investor in early-stage innovations for children has proven to be an effective strategy to accelerate the most promising solutions while responding to growing needs. **The Fund serves as a structured and systematic process to identify, validate, select, and invest in solutions that are proven to move the needle forward and generate progress on critical issues affecting children.**

The Fund also continues to prove that new innovations for children are accessible, scalable, and sustainable when they are Open Source and made available as digital public goods. The Fund has shown its role as a catalytic fund that drives investment and other resources towards innovations for children in ways that can even bear financial returns.

In 2021 and 2022, the Venture Fund implemented several strategies to achieve its goal of identifying and growing new, Open Source, emerging tech solutions that accelerate results for children:



Increasing the number of new innovations that accelerate results for children



Shaping emerging technologies to benefit children



Accelerating innovations to new markets through financially stable business models



Diversifying funding flows for innovations and building new communities of problem solvers



Innovating new fund practices

Key Results for 2021-2022

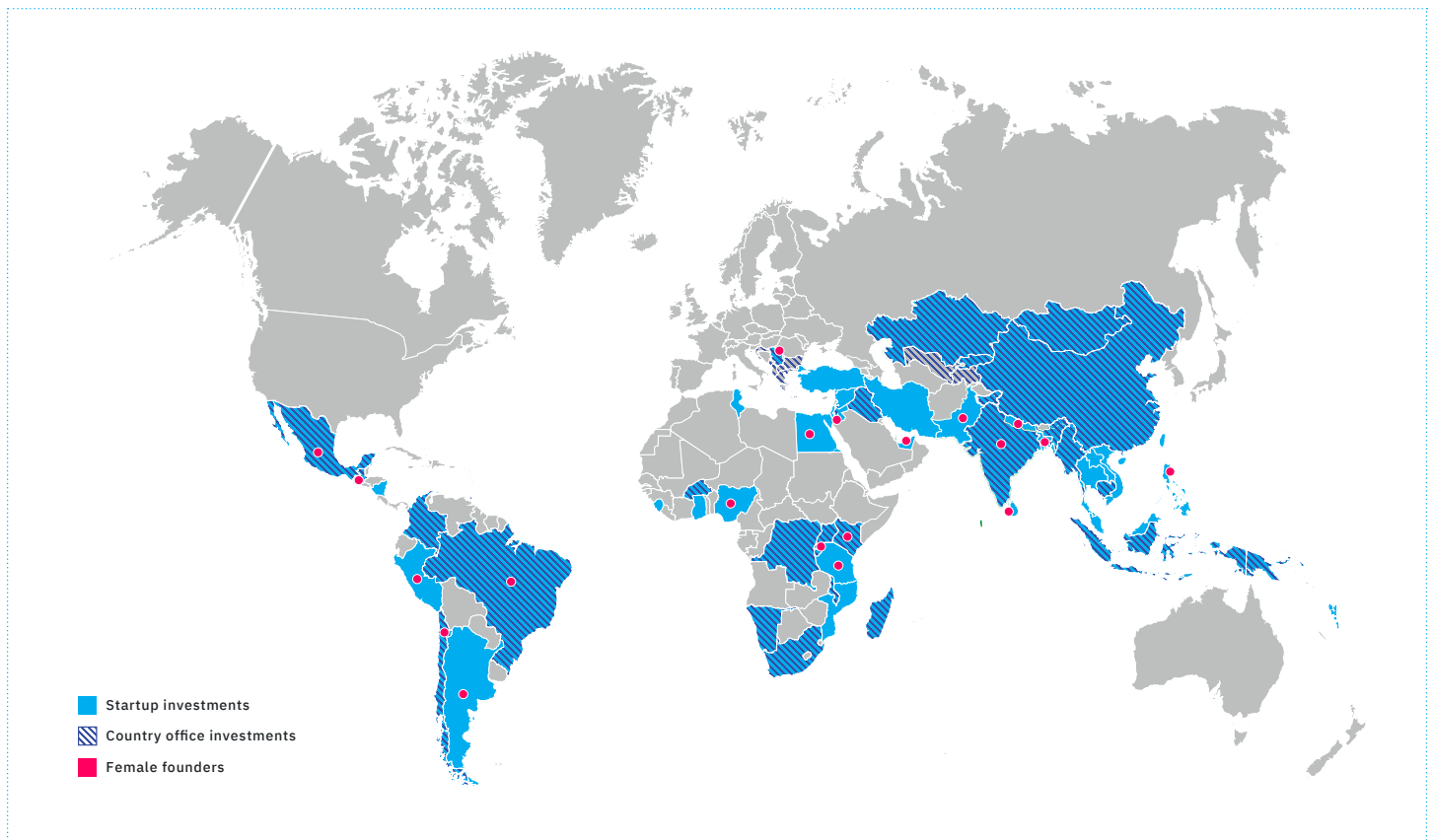


Increasing the number of new innovations that accelerate results for children

The Venture Fund continues to build and scale its portfolio, enabling start-ups to grow, as well as UNICEF programmes to leverage new and innovative solutions more easily. During the reporting period, UNICEF **graduated 8 companies and onboarded 4 new cohorts comprising 23 startups**. This includes solutions that address child online safety, those that leverage AI and data science, and bridge and acceleration cohorts.

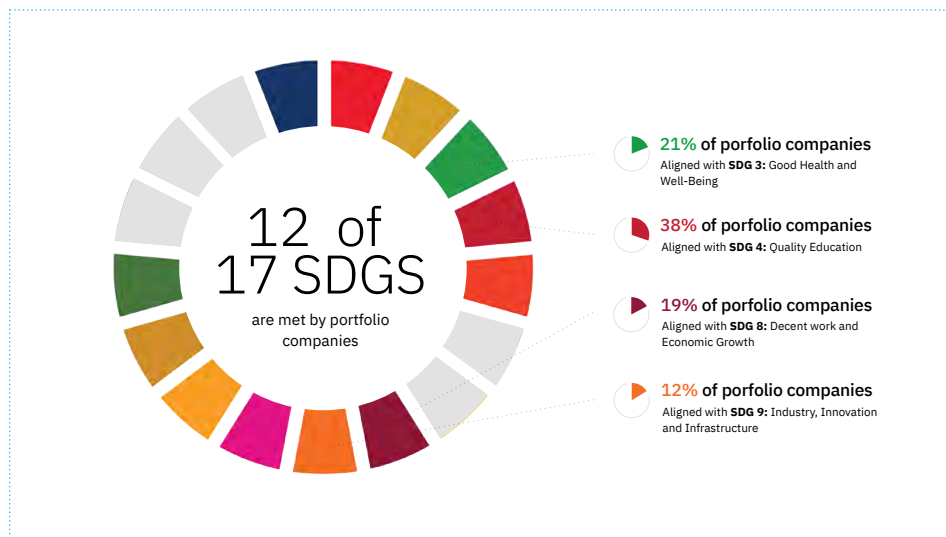
As of July 2022, the UNICEF Venture Fund has made – in cryptocurrency and fiat – **69 investments in early-stage startups, 12 investments in growth-stage solutions, and 55 investments in UNICEF Country Offices**. In total, reaching **74 countries** globally.

FUND INVESTMENT MAP



The portfolio solutions address challenges across a variety of SDGs and UNICEF’s programmatic areas which align with **12 of the 17 Sustainable Development Goals**. Solutions are most focused on advancing: SDG 4 Quality Education (38%), SDG 3 Good Health and Wellbeing (21%), SDG 8 Decent Work & Economic Growth (19%), and SDG 9 Industry, Innovation, and Infrastructure (12%).

SDG alignment of Fund solutions



To date, the Venture Fund portfolio has reached a total of **31.7 million beneficiaries**, indicating for these early-stage solutions significant initial traction and their ability to meet the needs of their users. While representing less than half of the portfolio, **female-led companies reached 58% of the beneficiaries across the portfolio**.

1.8M

children benefitted from personalized learning online

- **1.8 million children** benefitted from **accessing personalised learning online**. This included tools to make learning content more accessible, as well as learning management platforms to provide tailored support based on a child’s learning needs. For example, OTTAA, an AI-powered alternative and augmentative communication tool that allows children with disabilities to communicate, is supporting 10,000+ users monthly across 11 countries.

570K

beneficiaries recieved access to health information and services

- Over the past year, Fund companies were able to improve health outcomes by providing **570,000 beneficiaries access to health information and services**. This number has doubled since last year. Fund startups have created platforms for **strengthening health supply chains** to improve the distribution channels for vaccines and other essential health commodities; and **providing effective and efficient remote di-**

agnosis. 40% of the beneficiaries reached benefitted from access to the COVID-19 vaccine as a result of improvements made to the vaccine supply chain in India with StatWig's solutions Vaccine Ledger. Additionally, **800,000 digital prescriptions** were provided through Prescripto.

Venture Fund portfolio solutions are meeting new global technical standards and receiving visibility. The Fund acts as a pipeline for solutions to become Digital Public Goods (DPGs), certified by the Digital Public Goods Alliance (DPGA). From the Fund's portfolio, 10 companies have been vetted as Digital Public Goods and 24 companies are DPG nominees. Approximately **10% of all vetted DPGs and 12% of all DPG nominees presented on the DPGA's registry originate from Fund-supported projects.**

10 vetted DPGs + 24 DPG nominees

from the Fund's portfolio



Shaping emerging technologies to accelerate results for children

The Venture Fund continues to actively track the latest developments and trends in emerging technology areas, aiming to capitalise on these and to shape new solutions to accelerate results for children.

Blockchain

The Venture Fund's investment cohort focused on financial inclusion has generated significant results already, demonstrating the value that the newest developments in blockchain can bring to providing financial services to those previously un- or under-served. This includes increasing access to universal basic income schemes in Kenya, improving transparency of voucher-based assistance programmes in Nepal and decreasing the costs of cross-border remittances. Companies in this cohort have leveraged the increasing maturity of the blockchain ecosystem and web3 applications to develop solutions that are user-friendly and can be used in low infrastructure and low resource environments. These solutions have the potential to bring direct value to cash assistance efforts.

AI and Data Science

The Fund continues to grow its portfolio leveraging AI and data science, onboarding most recently in early 2022 a cohort of companies leveraging these technologies to improve remote service delivery. The Fund's investment strategy has already generated solutions that leverage the latest developments in areas such as foundation models for natural language and imagery recogni-

tion applications. Geospatial imagery recognition using deep learning models are now being scaled rapidly, including through the Fund's growth investee Dymaxion Labs used in several countries in Latin America. Investees Thinking Machines (now accelerating to 9 new countries) and Cirrolytix are using predictive analytics with crowdsourced data to solve critical social challenges. Finally, Weni (used in 29 countries) is using Bidirectional Encoder Representations from Transformers (BERT) to improve analysis of ambiguous text and automated responses through chatbots.

Cryptocurrency and Decentralised Finance

Building on the growing experience with cryptocurrency, the Fund has been leveraging the developments of higher order applications that allow for new ways of value creation and of meeting user needs. This has included benefiting from NFT sales to raise new funds for the Venture Fund, advising on the use of quadratic funding to raise funds for UNICEF's response in Ukraine and designing related pilots in quadratic funding and staking to raise additional resources for Fund portfolio solutions and to provide connectivity.



Accelerating innovations to new markets through financially sustainable business models

In 2021, the Venture Fund operationalised its new strategy, providing dedicated growth funding to the most promising solutions in its portfolio with a focus on facilitating use of frontier tech solutions within UNICEF country programmes.

Through the newly launched Growth Funding modality, the Fund has onboarded a total of 12 companies to receive growth funding. Both seed and growth funding to start-ups continues to be accompanied by dedicated mentorship, including on sustainable business models. The Fund's portfolio continues to financial perform above average expected for similar early-stage solutions, showing the Fund's effectiveness in identifying and growing solutions that bring both social and financial returns.

KEY METRICS

\$27.7M

Follow-on funding (USD) raised by the Fund's portfolio of startup and country office investments

6

Successful exits by Fund portfolio companies over the past 12 months

100+

Countries with beneficiaries of the Fund's initial investments, growing from 74 countries

KEY FINANCIAL RESULTS

- The Fund's portfolio of startup and country office investments have raised approximately **USD \$27.7M** in follow-on funding
- Portfolio companies are creating commercially sustainable solutions: **80%** of active portfolio companies generated revenue over the past year with an average revenue amount of approximately **\$150K**. Within six months, the first cohort of growth companies generated **USD \$2M in revenue**.
- Over the past 12 months, **6 companies made successful exits** (i.e. 8% of the portfolio), ahead of traditional venture capital standards

KEY GROWTH FIGURES

Overall, **20 start-ups** from the portfolio have **scaled their solution outside of their country of origin, of which 11 have scaled to at least 3 new countries, reaching a total of 294 countries across them** (total number, not individual countries). This means that the benefit of the **Fund's initial investments in 74 countries are reaching beneficiaries across 100+ countries**. An example of this is the implementation of Egyptian start-up, **VRapeutic's** cognitive learning extended reality platform in Vietnam (please refer to [Appendix A](#) for all Impact Highlights).

The **12 companies** that received growth funding in 2021 and 2022 will scale to **25 new countries** over the funding period – all through the close collaboration with UNICEF Country Offices. Within the first six months, the first cohort of growth companies have already **expanded to 16 new countries**.

Solutions supported by the Venture Fund are being used by UNICEF programmes in the areas of education, child protection, accessibility, emergencies, health, and more. Through Long Term Agreements (LTAs), **7 startups provided services to 61 projects across UNICEF country offices**.

[VRapeutic, \(Egypt\)](#) has prototype its platform in collaboration with the UNICEF Country Office in Vietnam



▶ [Play Impact Highlight video](#)



Diversifying funding flows and building new communities of problem solvers

The UNICEF Venture Fund aims to challenge and redefine the unbalanced flow of resources and value, that are leading to the development of solutions of little social value, limited applicability in developing markets and excluding a diverse community of innovators to partake in the global digital market.

- In 2021, the Fund further increased the diversity of funders received seed and growth funding for early-stage innovations. This year, the Fund expanded its reach to **Sri Lanka, the UAE, Timor Leste, Malaysia, Thailand, Vietnam, and Laos.**
- The Fund's portfolio is now comprised of **43% female-led/founded startups**, coming closer to the Fund's goal under its **Smart Investing Initiative**, aiming to increase the share of female-led companies in the overall portfolio from 30% to 50% (compared to a global average of 2% of VC funding going to female-founded startups as of April 2022).
- The Fund **exclusively invests in Open Source solutions** that have the potential to create scalable digital public goods. By exclusively investing in solutions with open licenses created with collaborative models of development, startups create adaptable, versatile software that can be used without limitations on the freedoms of studying the source code, using the software for any purpose, making custom modifications, and distributing changes to others. During the one-year reporting period, **~19,000 commits** were contributed to 529 Open Source repositories by Fund investees.

19,000

Commits contributed to 529
Fund investee Open Source
repositories



Innovating new Fund practices

The Fund are still the **first and only mechanism in the UN to accept, hold or disburse cryptocurrencies**. This year, the **CryptoFund disbursed 732.5 ETH + 3.13 BTC, and supported 21 projects.**

There has been a dramatic increase in the efficiency and transparency of investments made. Using cryptocurrency as compared to traditional fiat investments has helped improve speed and cost of transactions. 100% of transactions are publicly viewable. To date, UNICEF has spent less than .01% on transfer fees and the average settlement time for each transaction

(i.e., transfer of funds to a startup) was under 10 minutes. This decreases the amount of funds used for operational purposes and allows more to be directed towards new innovations themselves.

Funding in crypto has presented unique opportunities to startups in challenging contexts:

Companies have been able to hire the best talent around the world and easily make payments to their staff. Many of the top developers around the world prefer payment in crypto rather than fiat currency, meaning our startups present an enticing offer.

“We have received both fiat currency through international bank transfer and cryptocurrency. We find the value transfer across jurisdictions much easier with cryptocurrency. Also with cryptocurrency funds the expense transactions are transparent and trustless.”

GABRIELA GUERRA

Founder BX Smart Labs, Mexico

Startups have also benefited from the low cost of making transfers, as opposed to traditional money transfer options, as well as the ability to send payments more easily across borders.

“As a startup based in Argentina, receiving cryptocurrency is a major advantage, as government policies don’t allow us to receive US dollars and keep the funds in the foreign currency. Moreover, we must liquidate foreign investment at the official exchange rate, more than 50% lower than the one in the market. Our inflation rounds from 2% to 3% monthly, so this was a great opportunity to receive and stay in another currency.”

ANTONELLA PERRONE

CTO of Xcapit Labs, Argentina

Accelerating Solutions and Results for Children



Increasing the number of new innovations that accelerate results for children

In 2021 and 2022, we witnessed the Venture Fund portfolio recalibrate to a new reality post COVID-19. The Fund's companies supported UNICEF programmes in taking advantage of new technologies and benefiting from experimentation and innovation. This included solutions for financial services, child online safety, and remote tools for health and education.

The Fund has invested in new solutions that are generating impact

Child Online Safety Cohort

Technological solutions are one crucial element to efficiently respond to the threats of the online environment for children. In February 2022, the Fund invested in **2 female-founded companies** as part of the **Child Online Safety Cohort**, in partnership with the Global Partnership to End Violence Against Children. Expanding the Fund's reach to Sri Lanka, these companies are creating software solutions that respond to the four broad categories of digital risks to children: Content, Contact, Conduct and Contract Risks.



[Tilli \(Sri Lanka\)](#)

Tilli is a game-based, AI-powered social-emotional learning tool that teaches 5-10-year-olds the skills needed to stay safe and healthy.



[Talk2U \(Brazil\)](#)

Talk2U is a behavioral micro-intervention chatbot to impart strategies to users for child online safety, as well as trainings to prevent different types of abuse.

AI and Machine learning technology startups

In May 2022, the Fund invested in **9 new startups using AI and machine learning technology for accelerating learning outcomes**, generating data to forecast health and healthcare needs, and providing access to **online tools at lower costs and in low connectivity settings**. 5 of 9 startups in this round of investments are female founded/co-founded, and the cohort expands the Fund's geographic reach to **Indonesia** and **the UAE**.



[Jobzi \(Brazil\)](#)

Jobzi is using AI to predict school connectivity and analyse the relationship between connectivity and employment.



[Portal Telemedicina \(Brazil\)](#)

Portal Telemedicina is developing a platform that provides fast, reliable, and low-cost diagnostics to over 300 cities in Brazil and Africa leveraging AI.



[Cirrolytix \(Philippines\)](#)

Cirrolytix is creating a platform for dengue prediction using climate and health data for epidemic management. Their solution has already been recognised as a digital public good (DPG).



[Eyebou \(UAE\)](#)

Eyebou is developing an AI tool for virtual eye exams to detect vision disorders in children and is optimised for low-resource environments and limited connectivity.



[Neural Labs \(Kenya\)](#)

Neural Labs is using computer vision and image recognition algorithm to detect diseases through chest X-rays



[Bookbot Technology \(Indonesia\)](#)

Bookbot Technology (Indonesia) is developing a gamified app for real-time, on-device speech recognition, providing feedback through pronunciation modeling.



[AfriLearn \(Nigeria\)](#)

AfriLearn is creating an app for accessible, adaptive learning, aligned with national curricula.



[Om3ga \(Serbia\)](#)

Om3ga is developing a deep learning, speech-to-text solution integrated with a chatbot builder, making it possible for children with disabilities to communicate.



[AirQualityAI \(India\)](#)

AirQualityAI is creating a machine learning predictive model for measuring air quality.

Blockchain cohort

The 2021 Blockchain Cohort, focused on **developing open-source, blockchain-based solutions toward greater financial inclusion**, has recently reached the 12-month milestone and the portfolio companies will soon be graduating from the Venture Fund. Over the course of the investment period, the startups developed digital tools to empower local communities to engage with systems in new ways, loan and investment services for unserved communities, and remittances and humanitarian cash platforms. Overall, the cohort was able to facilitate over **120,000 financial transactions, serve 62,000 users, reach 600,000 beneficiaries, and raise over USD \$4 million in follow-on funding.**

The cohort also fostered **2 in-cohort collaborations**. For example, Treejer partnered with Kotani Pay to provide African planters with a tool to off-ramp their digital assets to fiat currency. The portfolio companies are also working with a diverse range of notable partners, ranging from Ethereum Foundation and the Celo Latam Team to mobile money providers in Africa, all supporting in magnifying the reach of the solutions. These noteworthy achievements are further proof that investing in and supporting traditionally overlooked innovators can spur new, publicly available innovations that attract capital and generate a return surpassing the initial investment.

2021 BLOCKCHAIN COHORT RESULTS

120,000

Financial transactions facilitated by the 2021 Blockchain cohort

62,000

Users served by 2021 Blockchain cohort companies, reaching 600,000 beneficiaries

\$4M

3rd party funding raised (USD) by 2021 Blockchain cohort



[Rumsan \(Nepal\)](#)

Rumsan has developed Rahat, a Digital Cash and Voucher Assistance (CVA) management system that uses mobile-based blockchain tokens, ensuring faster fund transfers to beneficiaries, even those in the most hard-to-reach areas.

During their time with the Fund, [Rumsan](#) developed features for their digital CVA management system, including an aid agency dashboard, a native Android app for vendors and aid agencies, a social mobiliser web app for field staff and social mobilisers, and an NFT token distribution module. The team also conducted a series of mini pilots, reaching over 5,000 beneficiaries. Going forward, the Rumsan team is in final discussions with UNICEF Nepal to run a 2-year pilot, focused on disbursing funds to beneficiaries affected by potential floods as part of the Emergency Response programme. In the case that a flood event does not occur, the pilot will support beneficiaries effected by the COVID food storage. The pilot would include a robust M&E framework, with the objective of validating the value that blockchain can bring to UNICEF's cash programmes globally.



[Leaf Global Fintech \(Rwanda\)](#)

Leaf Global Fintech has developed a virtual bank for refugees and vulnerable populations, allowing for the storage and transfer of assets across borders without the need for a smartphone.

As part of their funding from the Venture Fund, [Leaf Wallet](#) deployed an open source foreign exchange rate calculator into the Leaf Wallet, allowing customers to quickly check exchange rates in real time, and completed development of an open source lending application. To date, they have reached over 40,000 beneficiaries and scaled their solution across 4 countries in Africa. In March 2022, Leaf was acquired by IDT Corporation (NYSE: IDT), a global provider of fintech, cloud communications, and traditional communications services. The acquisition value was in the range of \$5M-\$7M and will enable Leaf's solution to scale its impact and to serve even more refugees, migrants, traders, and unbanked people.

Please reference [Appendix B](#) for a full list of graduate and new company results.



Shaping emerging technologies to accelerate results for children

For the startups to stay competitive in a new business and economic environment, they require new strategies and practices. To respond to the changing landscape for startups, the Fund launched its growth-stage investment strategy, which provides additional technical assistance and funding for promising solutions to deliver results for children.

In December 2021, the Fund launched its new growth funding strategy to accelerate more promising Open Source solutions and position them for sustainable investments. Recipients of growth funding collaborate closely with UNICEF country programmes, leading to closer alignment of their solutions to UNICEF's engagement and needs, as well as building internal capacity to leverage new technologies.

Growth funding aims to further consolidate and increase the Fund's ability to accelerate solutions beyond the early prototype stage. The Fund's portfolio has shown a track record in scaling and in meeting the needs of beneficiaries across countries and contexts. 20 solutions in the portfolio have scaled to 1 or more additional countries (increasing by 66% from the previous year). 11 of these 20 companies scaled to more than 3 countries.

The Fund has already seen ground-breaking results from the seed stage portfolio companies even when compared to private venture capital funding. However, these early-stage innovators continue to face challenges in accessing sufficient financing to take them to the next stage.

20

Portfolio solutions that have scaled to 1 or more additional countries

! Only 10% of private capital investment goes into emerging markets

Issues related to currency devaluation, consumer volume, and the perception of heightened risk lead to investors' lack of demand and confidence, and the COVID-19 pandemic has driven these already -struggling emerging market funds to close – 51% liquidated in 2020.

! Early-stage innovators continue to face challenges in accessing sufficient funding to grow their reach and impact further

This phenomenon of the missing middle in financing for the mid- to late-growth stage of innovation has been well documented, yet crucial, as it is often the time when viable ideas and MVPs turn into profit-making businesses despite being characterized by marginally lower rates of financial return inherent to this stage of innovation.

! We have only 9 years left to meet the Sustainable Development Goals for children; and the challenges we seek to solve are too complex for one organisation to solve alone.

Identifying, prototyping, and co-creating emerging technologies requires collaboration with innovators on the ground to ensure that technologies are built to benefit all children's wellbeing and boundless potential. Tapping into – and helping develop – the new communities of diverse innovators and problem-solvers building tomorrow's solutions in the fast-moving digital economy is necessary to address today's challenges.

This new growth funding opportunity available to companies that have received seed funding from the Venture Fund and have shown promising results, enables UNICEF to:

- Further strengthen the quality of Open Source intellectual property in areas that are high priority to reach UNICEF's goals for children
- Grow the evidence base that underpins these solutions to illustrate how they can accelerate results
- Facilitate growth of companies by providing access to innovators and ecosystems in new markets, including through increasing collaboration with UNICEF Country Offices
- Validate product-market fit as a basis for scaling Open Source solutions within UNICEF
- Grow a pipeline of potential projects that qualify as Digital Public Goods (DPGs)

Acceleration Funding

Acceleration Funding is designed to offer the most promising solutions from the Venture Fund Portfolio follow-on funding, entry into new markets in close collaboration with UNICEF Country and Regional Offices, and strengthening of business models – all further contributing to the creation of DPGs that can accelerate the results for children.

Companies that have shown a strong record of Open Source activity, having continuously built on their respective solutions in the open, and that have proven to be financially sustainable along with robust evidence of impact, can be eligible for Acceleration Funding of up to \$400,000 USD.

Bridge Funding

The Bridge Funding tier is a vehicle for companies that have already developed and validated their MVP but require additional capital of up to \$150,000 USD to take the solution to the next stage of impact.

To ultimately generate evidence of impact, this tier will provide additional support to companies in a variety of growth areas, including but not limited to:

- Further validating product/market fit
- Deploying large-scale pilots
- Developing additional features to enhance solutions' usability
- Collecting data to validate evidence of impact of the solution

Accelerating customer acquisition and geographical expansion

In 2021, 6 growth investments were made. These promising solutions are focused on developing Open Source solutions to solve issues of emergency and disaster response, remedial learning, supply chain inefficiencies, and digital connectivity. Within six months, the companies have delivered results to over **280,000 beneficiaries, expanded to 7 new countries, and generated \$2M in revenue.**

In **April 2022** the Venture Fund announced the second round of **Growth Funding to 5 portfolio companies** that have shown promising results across their machine learning, AI, drones, and accessibility solutions. Collectively, they represent **20K monthly active users, with three solutions nominated and two solutions already part of the DPGA registry.**

280,000

Beneficiaries of 2021 growth investments

7

New countries reached with the 2021 growth investments

\$2M

Revenue generated (USD) by 2021 growth investments



Somleng (Cambodia)

Somleng is a collection of Open Source tools which provide a full-stack cloud communications platform

Somleng has developed an efficient and low-cost Interactive Voice Response (IVR) and SMS platform, integrated into the RapidPro platform to extend its reach to communities with low literacy levels. Over the first six months of their recent Growth-investment, Somleng have been successful in:

- Supporting UNICEF Guatemala’s project with over 7000 users as part of their funding, which provides a free-volunteer subscription mobile service. The project seeks to promote early childhood development through a comprehensive intervention model —using text messages (SMS), social media, and voice messages (IVR) to provide an integrated package of information about health, hygiene, sanitation, maternal nutrition, and parenting guidelines. This information is targeted to caregivers, pregnant women, and primary health care workers in seven native languages.
- Scaling their solution across two new countries, Panama and Honduras, reaching over 80,000 beneficiaries.



Dymaxion Labs (Argentina)

Dymaxion Labs uses satellite imagery and machine learning to deliver geospatial analytics insights for 1) mapping informal and deprived areas in urban areas; 2) crop mapping (and impact of floods and droughts on crops); 3) climate change (real-time weather variables to feed into early warning systems and time series forecasting)

With recent Growth-investment from the Venture Fund, **Dymaxion Labs** have begun developing and testing new models for crop mapping: Argentina and Peru; informal settlements: Chile and Brazil; and informal settlements and flood vulnerability: Honduras. Over the first six months of their investment period, Dymaxion Labs have successfully started mapping informal settlements in all cities in Chile together with the NGO Techo (~100.000 sq km2); working on a project with iMMAP to map new human settlements using machine learning and radar imagery (due to a cloudy environment) to enable data-driven management of the humanitarian crisis that is taking place in Colombia (~100 urban areas across the Pacific in Colombia); and conducted a 200-people workshop together with Inter-American Development Bank to train developers in our open-source tools (Satproc and Unetseg).

Please reference **Appendix C** for a full list of graduate and new company results.

OTTAA is a recent Growth Fund investee



StaTwig is a recent Growth Fund investee



Moving from prototypes to pilots to production applications with UNICEF Country Offices

UNICEF Country and regional offices

UNICEF Country and Regional Offices have played a critical role in **facilitating acceleration of new solutions** to reach more children and to integrate emerging technology solutions into ongoing UNICEF programming.

9 EAST ASIA AND PACIFIC REGION COUNTRY OFFICES

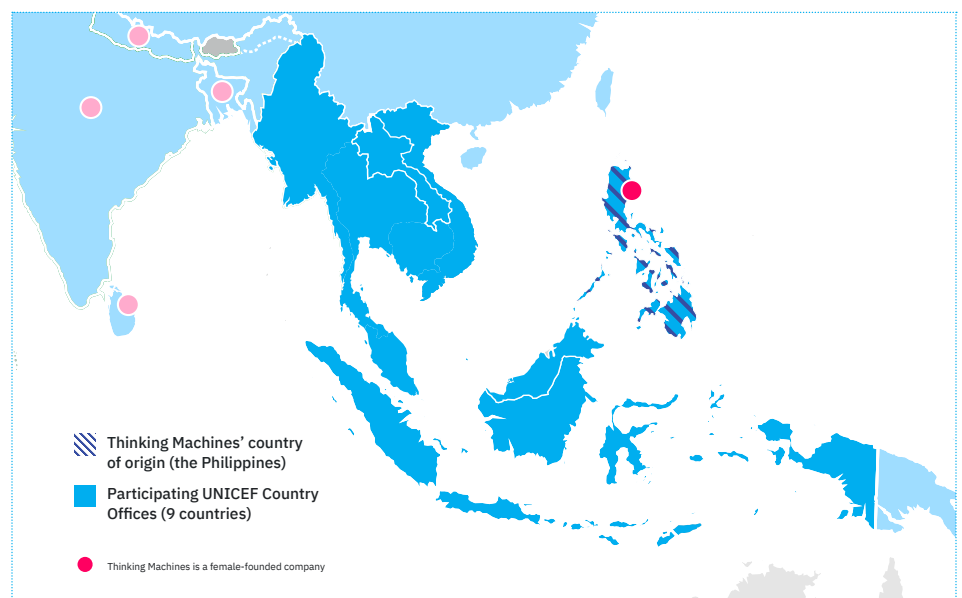
With support from the UNICEF Regional Office, the start-up [Thinking Machines](#) is collaborating with 9 country offices in the East Asia and Pacific region. The project was co-designed with the data scientists in the UNICEF Regional Office and Thinking Machines, and as a result, the project will deliver an AI4D Research Bank that will provide UNICEF Country Offices with insights from non-traditional sources of data on poverty mapping and air quality. The participating countries are Cambodia, Myanmar, Timor Leste, Malaysia, Thailand, Vietnam, Laos, Indonesia, and the Philippines.

Over the first six months of the investment, Thinking Machines kicked off its project with the UNICEF Venture Fund and Regional office to build the AI4D (Artificial Intelligence for Development) Research Bank. The Research Bank will accelerate the development and adoption of effective machine learning models by increasing access to local training data and technical resources for geospatial data handling. During this time, they've worked on air quality research as part of the AI4d Research bank. They

[Thinking Machines, \(Philippines\)](#) is scaling its solution across 9 countries in Southeast Asia



East Asia and Pacific region programme countries collaborating with [Thinking Machines](#)



have tested the feasibility of training a machine learning model on sensing data to estimate particulate matter (PM) 2.5 and will publish a research paper to disseminate their methodology and results over the next couple of months. They have also started working with UNICEF mentors to define their AI4D Research Bank Open Source strategy and refine their value proposition for GeoAI solutions.

EAST EUROPE AND CENTRAL EAST ASIA REGIONAL OFFICES

UNICEF's East Europe and Central Asia Regional Office continued driving the scaling up of cBoard, an accessible tool for children with disabilities, **reaching 5 countries and functionality in 6 languages**. In these countries, **1400 children with disabilities** now use the solution, and 23K people, of which 10,000 were children, benefitted indirectly from the training of professionals to use the tool. The scale-up phase also contributed to the development and finalization of a number of resources, and pool of professionals that should allow for easier onboarding of new countries and expansion of this initiative.

UNISAT + KAZAKHSTAN, KYRGYZTAN AND UZBEKISTAN COUNTRY OFFICES

The Unisat initiative originally incubated in Kazakhstan, developing STEM skills in girls through a process of building and launching nanosatellites, scaled to Kazakhstan, Kyrgyzstan and Uzbekistan, reaching 3,000 young people.

UNILEARN + INDIA COUNTRY OFFICE

In India, the Country Office scaled UniLearn, a Moodle based learning management system, reaching 7+ million children as indirect users (school children) and 350,000 direct users (mostly teachers).

CLOUDLINE + NAMIBIA COUNTRY OFFICE

With support from the Venture Fund, UNICEF's global drones work scaled to Namibia, where UNICEF's Namibia country office has been busy supporting local partners in building the regulatory framework and systems to allow for medical drone operations in the country. In 2022, the Country Office plans to integrate Cloudline, UNICEF Venture Fund graduate from Kenya to test their model in-country for medical delivery.

Drone tool adoptions by National Governments and UNICEF Country Programming

Fund investments in Drone applications have been the catalyst for the adoption of drone tools by National Governments and UNICEF Country Program-

1400

Children with disabilities use portfolio solution [cBoard](#) across 5 countries

350,000

Direct users of portfolio solution [UniLearn](#) in India

ming. Drones are essential tools to rapidly collect data for decision making or a crucial vehicle for delivery of life-saving medical commodities.

DRONES FOR EMERGENCY PREPAREDNESS AND RESPONSE

In response to internal demand, the Fund is working with ICTD and the Emergency Operations division of UNICEF to mainstream drone tools for emergency preparedness and response into UNICEF's global emergency operations strategy. The drones for emergency operations scale-up is based on tools that were developed through Fund investments and the lessons we've learned from local implementation in Malawi, Kazakhstan, and Sierra Leone Drone Corridors.

UNICEF DRONE CORRIDORS

Over the last five years we have observed that new drone projects in a country are more sustainable when supported by the presence of a UNICEF Drone Corridor. A drone corridor is dedicated ecosystem airspace and ground infrastructure to enable the testing of drones or drones use cases, the training of drone personnel, development of the local drone, and fostering of standby capacity to rapidly deploy or support drone activities for the UN, Government, or private sector. The fund has proven the utility of drone corridors through its initial investment in and continued support for UNICEF drone corridors in Malawi, Kazakhstan, and Sierra Leone. We're working to pivot UNICEF's role in the drone corridor model to the provision of technical assistance, and provision of software, hardware, guides, and lessons learned via the Drones for SDGs toolkit. The Office of Innovation recently launched a partnership with the International Civil Aviation Organisation which will support scaling of a new and lean drone corridor model to new countries, leveraging ICAO's leadership and engagement with civil aviation authorities and expertise in this area.

AFRICAN DRONE AND DATA ACADEMY

Following the initial investment provided by the Venture Fund to the UNICEF Country Office in Malawi, the Fund is technically supporting the scaling of the African Drone and Data Academy by making its content and curriculum available as a digital public good. Since its establishment, the Africa Drone and Data Academy has trained over 500 graduates all of whom have found employment in their various countries in the private sector, Government, and UNICEF Country Offices. With a growing number of UNICEF country offices and Governments requiring human resources in drones, the African Drone and Data Academy's courses will provide a key learning asset in the mainstreaming of drones in UNICEF programming.

500+

Graduates of the African Drone and Data Academy, all of whom found employment in the private sector, their governments, and UNICEF Country Offices

Platforms that increase access to Open Source solutions

The Fund has been creating platforms to increase access to Open Source solutions in particular for UNICEF Country Offices and other partners. These platforms aim to be easily accessible libraries to enable greater uptake of these solutions.

PERSONALISED LEARNING

Following successful development of Open Source algorithms that personalise content for various needs as part of the Generation Unlimited cohort (graduated in 2021), the Fund created a toolkit to ensure that these open models are easily accessible and can be integrated into commonly used learning management systems.

Based on user research across ten different country offices and technical subject matter experts, the toolkit was designed to organise, curate, and provide education of seven different AI learning personalization models and data sets' documentation. The overall aim to increase learning outcomes for all children by leveraging the power of AI and making it accessible to both technical and non-technical users to implement and customise to existing LMS solutions. In collaboration with the DPG Alliance, this toolkit will be expanded further in 2022 to collect other open models and training sets.

AI Toolkit for Personalized Learning prototype. The toolkit aims to organize, curate and provide AI learning personalization models and data sets' documentation

AI Toolkit Home Introduction Solutions Personalization unicef for every child

Personalized learning for all children

UNICEF's Artificial Intelligence Personalization Toolkit

[VIEW ALL SOLUTIONS](#)

What brings you here?

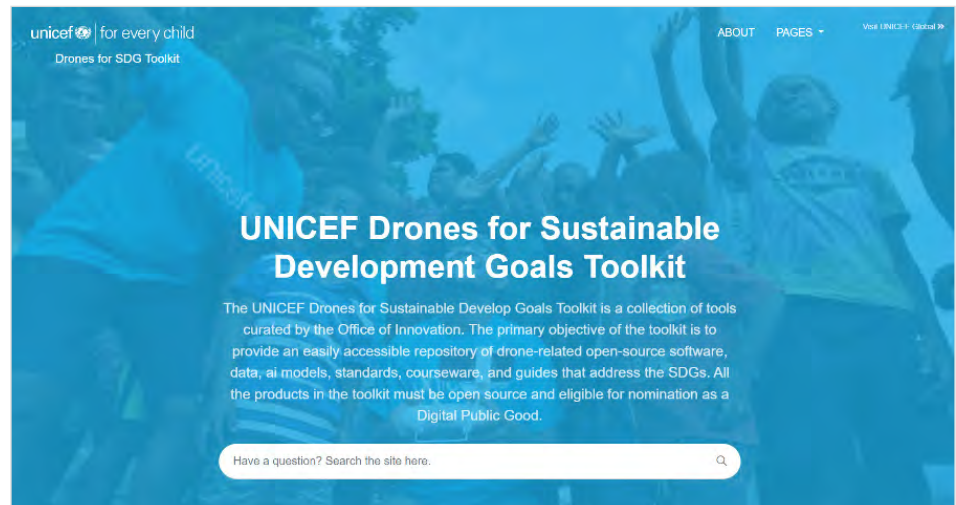
- Accessibility**
Leveraging artificial intelligence to convert content into universally designed and accessible formats
[ACCESSIBILITY SOLUTIONS](#)
- Adaptive Learning**
Improving the safety, efficiency and automation of learning-related processes.
[ADAPTIVE LEARNING SOLUTIONS](#)
- Recommender Systems**
Creating personalized learning journeys through automated interactions
[ACCESSIBILITY SOLUTIONS](#)

DRONES FOR IMAGERY AND DELIVERY

In November 2021 the Venture Fund launched the UNICEF Drone DPG Toolkit based on the learnings and success of the Fund's drone startups ([it can be accessed online here](#)). The toolkit is a repository of drone-related open-source software, data, AI models, standards, courseware, and guides that address the SDGs. All the products in the toolkit must be Open Source, aligned with the DPG standards, and are at least eligible for DPG nomination. The purpose of the toolkit is to share these solutions and lessons learned in UNICEF's drone investments in mapping, medical deliveries, emergencies.

The target users of the toolkit are UNICEF country offices, other UN agencies, innovation organizations, governments, and private sector actors using drones for the benefit of children or other vulnerable groups. The toolkit has been launched and popularised in the international humanitarian drone community of practice. In collaboration with ICAO, a recent partner to the Office of Innovation, the toolkit will be promoted to its 193 member states.

UNICEF Drone DPG Toolkit. The toolkit aims to share open source, DPG-aligned solutions and lessons learned in UNICEF's drone investments



Catalyzing private capital to accelerate reach

The Fund's portfolio companies continue to perform above average on financial metrics in comparison to similar early-stage solutions. This is important as the Fund aims to identify and support solutions that are backed by sustainable business models and to act as a catalytic investor that can attract and drive funding from other, new sources towards innovations for children. The portfolio's financial performance confirms the Fund's thesis that supporting traditionally overlooked opportunities can not only spur new, publicly available innovations but also that attract capital and generate a financial return that surpasses the initial investment.

The startups have raised over **USD \$17M** in external funding, with over **USD \$4.5M** in the last year. The Fund has seen a continued focus on developing sustainable business models, with active companies raising an average of **USD \$150,000 in revenue** annually. In the past year, **32% companies achieved profitability**, 13% more than the previous year.

32%

Fund portfolio companies who reached profitability in 2021-2022

PORTFOLIO SUMMARY METRIC	2020-2021	2021-2022
% of portfolio that are generating revenue	79%	80%
% of portfolio companies that are profitable	19%	32%
# of solutions that have scaled to 1 or more countries	12	20
# of solutions that have scaled to 3 or more countries	6	11
% of companies still active	88%	82%
% of companies that have raised follow-on funding	66%	72%
Total follow-on funding raised	USD \$12.5M	USD \$17M

While these results are promising, **female-led startups innovators continue to face challenges in accessing sufficient financing** to take them to the next stage. **Only 11% of the total third-party funding raised by the portfolio comes from female-led startups** despite them making up 43% of the Fund's portfolio.

This year saw the first successful exits of portfolio companies from the UNICEF Venture Fund. Prior to their respective acquisitions, [Atix Labs \(Argentina\)](#), [Geospoc \(India\)](#), [Giraffe \(South Africa\)](#), [Veative Labs \(India\)](#),

INCREASED CAPITAL RAISES AND EXITS



US\$ 1.9M

raised

Acquired by the Harambee Youth Employment Accelerator



US\$ 4M

raised

Acquired by Dev Clever for approximately US\$74.62M



US\$ 2.44M

raised

Acquired by ANI Technologies Ltd, the parent company of Ola Cabs



US\$ 2.6M

raised

Acquired by the the American Institutes for Research (AIR)



US\$ 64M

raised

Acquired by Globalant (NYSE: GLOB)



US\$ 5-7M

raised

Acquired by IDT Corporation (NYSE: IDT)

[Leaf \(Rwanda\)](#) and [Kimetrica \(Kenya\)](#) received early-stage investment and technical assistance to build Open Source digital platforms that bring positive impact to children's lives. The solutions range from Artificial Intelligence (AI) powered solutions for mapping rural schools to financial services enabled through blockchain technology.

Open Source Business Models

Through its experience with the Venture Fund portfolio companies, UNICEF has developed a set of resources, case studies and mentorship approach that focuses specifically on sustainable business models for Open Source solutions. This year, we continued to build a solid base for greater engagement from private investors and documented Open Source business models that previously raised private capital (i.e., venture capital equity investments, debt investments) to demonstrate the financial return potential of these solutions. Investment cases were documented to support pitching of these solutions and their business for further follow-on investment.

Additionally, the Open Source mentoring programme provided to start-up companies gave seven approaches for start-up companies to answer the question of how do you build a sustainable business approach when you work "Open"? While the Open Source model of working is not completely new, it is a new way of working for many people who have not previously participated in highly collaborative, distributed communities. The sustainable approaches include: Enterprise or targeted versions; Services around the product; Services as the product; Content; Packaging; Franchising and Training (for additional details on these models and metrics on the Open Source IP, please reference [Appendix D](#)).

Diversifying funding flows and building new communities of problem solvers in UNICEF Programme Countries

Over the course of 2021, UNICEF has been expanding its engagement in national level ecosystems to strengthen their role in generating new innovations for children. In collaboration with the Digital Public Goods Alliance, UNICEF Ventures has been engaging with entrepreneurs, accelerators and government stakeholders in ‘pathfinder countries’ to:

- Strengthen a local pipeline of new DPGs by providing content and resources for accelerators to support startups to align with the DPG Standard.
- Support government agencies navigate, select, and localise vetted DPGs, including from the Venture Fund portfolio
- Strengthen existing digital solutions used by the government with the support from UNICEF as DPGs

Strengthening the local pipeline of innovations

Startup accelerators can provide support to entrepreneurs and ultimately strengthen the pipeline for investment opportunities provided by the Venture Fund and global visibility through the Digital Public Goods Alliance. UNICEF developed the DPG Local Accelerator model to increase identification and acceleration of solutions to become recognised DPGs. This model has been captured in the [DPG Accelerator Guide](#) and is based on the experiences generated by UNICEF Country Offices partnering with the local entrepreneurship ecosystem.

- In Ghana, the Country Office partnered with MEST to accelerate open-source solutions and identified half of the cohort interested in developing DPGs, resulting in 2 vetted DPGs.
- In the Philippines, a fintech accelerator program helped 5 startups take the first step in developing open-source solutions, and 4 startups expressed interest in applying for DPG recognition.

- In Kazakhstan, the local government innovation hub, Astana Hub, has been supporting startups to develop DPGs, in which Accessible Kazakhstan was identified and now added to the DPG Registry.
- Jordan has currently partnered with a local startup accelerator called Shamal Start, in which the DPG Accelerator Guide will be leveraged to identify potential startup solutions that can be recognised as a DPG and support the implementation of a DPG Accelerator Program.

The guide seeks to provide accelerators with tools and content to integrate into ongoing incubation and acceleration programs covering business model development, product development and licensing, as well as development of networks to support scaling of the business and the solution (please reference [Appendix E](#) for more information of Pathfinder Country Activities).

Smart Investing Initiative

COVID-19 impacted female-founded companies harder than male-founded ones. However, this year at the Fund, **63% of new investments (or 7 of 11) were in female-led or founded companies**. The Fund also launched a campaign featuring female leaders, who shared their learnings and insights. The aim is to continue to identify and collaborate with more ecosystem players supporting female founders and partner with other investors and funders who want to provide co-investment or follow-on funding to the Fund's diverse portfolio.

63%

New 2021-2022 Fund investments that are female-lead or female-founded companies

Innovating new Fund practices and adapting to the evolving digital finance landscape

732.5 ETH +
3.13 BTC

Crypto disbursed to 21 projects in
2021-2022

The UNICEF Venture Fund remains the **first and only mechanism in the UN to accept, hold or disburse cryptocurrencies**. This year, **the CryptoFund disbursed 732.5 ETH + 3.13 BTC, and supported 21 projects and was able to expand its disbursement modalities**. Crypto has helped facilitate the Fund's focus on growth stage investments. As national governments are using more digital solutions, with governments adopting crypto as legal tender, or intensifying their explorations of Central Bank Digital Currencies, the lessons and tools generated by the CryptoFund and the Venture Fund's investments in blockchain and cryptocurrency-based solutions are becoming increasingly relevant to the organisation's overall engagement in digital finance. The CryptoFund positions UNICEF uniquely in the area of cryptocurrency, having the institutional knowledge to build on lessons of the CryptoFund and to use cryptocurrency in more programmatic contexts.

Key Results

Over the **two-year prototype period**, UNICEF has raised and disbursed cryptocurrencies to 35 projects, transacting 2000+ ETH and 4+ BTC at a combined value of \$3M (at the time of disbursement). The CryptoFund is now also able to support the Fund's support activities, such as fund management and technical assistance, as UNICEF has expanded the modalities through which payments can be made (please refer to the following page).

The CryptoFund has also differentiated UNICEF in the fundraising landscape and helped raise funds for regular resources and directed donations. The CryptoFund has also allowed for 100% transparency of transfer of funds with less than 1% spent on transaction fees. Vendors are interested in cryptocurrency as a form of payment – this includes startups, but also traditional vendors such as consulting firms or other service providers. During the prototype period, UNICEF spent more value than what donors expected us to disburse (based on the value at the time of receipt, UNICEF raised \$2.1M USD in crypto and the amount spent is over \$3M USD based on value at disbursement). While the volatility of cryptocurrencies continues to present a practical challenge (especially at the time of drafting this

<h1>2058 ETH + 4.1 BTC</h1> <p>Crypto dispersed</p>	<h2>\$2,131,110</h2> <p>Total value (USD) of crypto at time of receipt from donors</p>	<h2>\$3,193,000</h2> <p>Total value (USD) of crypto dispersed at time of transfers</p>
<p>The purpose of the Crypto fund is to:</p> <ul style="list-style-type: none"> → Increase efficiency and transparency → Unlock new programme opportunities → Pilot a new platform → Access untapped resources → Understand our digital future 	<h2>35</h2> <p>Number of projects supported with cryptocurrency</p>	<h2>< 10 minutes</h2> <p>Average transfer time (UNICEF HQ → Startup)</p>
	<h2>100%</h2> <p>Transparency of transactions</p>	<h2>< 0.1%</h2> <p>Spent on fees</p>

report, with the current crypto downtrend in prices), UNICEF is exploring new solutions, such as the use of stablecoins to address these challenges while continuing the leverage the benefits of transparency and auditability of cryptocurrencies.

There continues to be demand for the use of cryptocurrency from all stakeholders – donors interested in supporting innovative projects, companies willing to accept crypto as payment, and UNICEF colleagues intrigued at the benefits of leveraging cryptocurrency in various contexts.

New modality for the UNICEF CryptoFund

As UNICEF continues to explore and potentially expand how digital assets can be used, the CryptoFund was granted approval to utilise crypto funding for Service Contracts. This is a positive step towards expanding the use of crypto as well as prototyping the readiness of our systems. Through this modality, the Venture Fund can procure services (such as portfolio relationship management tools, website development, etc.) in crypto, creating an additional layer of transparency for the Fund. This service contract is a deliverable-based contract where payment for the deliverables received are settled using Ether or Bitcoin.

Looking forward

The CryptoFund pilot phase is coming to an end in December 2022. Section 3 outlines opportunities and plans ahead for the CryptoFund and the use of cryptocurrencies at UNICEF.

Section 3

New Frontiers for the Fund



The core motivation of the Fund remains identification of “clusters” or portfolios of initiatives around emerging technology - so that UNICEF can both shape markets and also learn about and guide these technologies to benefit children.

Over the last year, the Venture Fund has aligned its investment focus areas and calls for applications more closely with the priority Innovation Portfolios, while maintaining the Fund’s focus on exploring and shaping emerging technologies and on building digital platforms that provide value across sectors and results areas.

UNICEF’s innovation portfolio approach focuses its efforts on the most challenging problems UNICEF is trying to solve for and with children and young people, through 9 thematic portfolios.

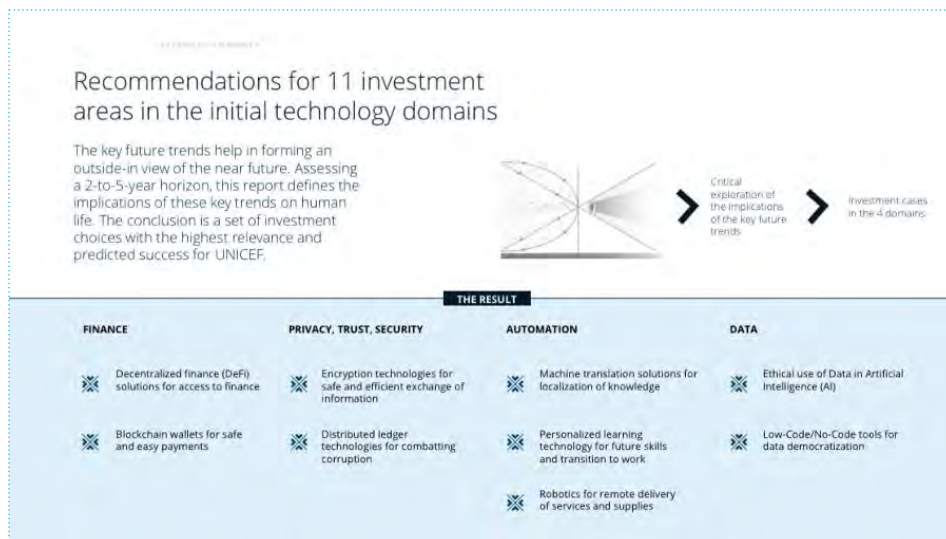
Emerging technology forecast and strategy for Venture Fund call for applications

In December 2022, the Fund led internal and external stakeholder consultations to map new and less-explored technology areas that could hold value for UNICEF’s work in a 3-5-year horizon. The analysis has provided insights on the current and projected landscape of technology advancements, with a focus on opportunities these emerging areas pose for UNICEF. It also highlighted gaps and opportunity areas for developing Open Source solutions would bring most value to children, and concrete investment strategy recommendations across 4 main domains: the future of finance, the future of privacy, trust and security, the future of automation and the future of data.

Overall, the trend analysis confirmed that Fund investments are leveraging the latest developments and confirms the Fund’s explorations of key frontier technology themes. The themes the Venture Fund will explore over the coming period include:

Privacy, Trust and Security: exploring encryption and digital identity

As the trend for digital based identity systems being foundations for service delivery, increases in scale, the challenges around privacy, trust, and security of identity are brought into sharp focus. Applying emerging technologies to tackle these challenges will pave the way for safe and efficient exchange of information, and can enhance transparency of institutional systems, streamlining



lengthy processes and protecting people’s rights. For example: encryption technologies for safe and efficient exchange of information, and mechanisms to effectively manage multiple online identities to prevent fraud and abuse.

Artificial Intelligence and Data Science: potential of addressing complex challenges with edge and quantum computing

We are seeing the ushering in of an age where, due to increased availability of data and advancements in automation, information and services are becoming more personalised. Rapid advancements in the field can drive quality, efficiency, and flexibility of services to new heights, but there are also risks. The vast amounts of data processed by AI systems requires enormous computational power. Increased adoption and availability of Edge and Quantum computing over the next several years, could turbo charge this trend and enable significant impact on the type, speed, and ease at which data can be accessed and analysed. This can have major positive effect on UNICEF’s work.

Mass-connectivity and forecasting and monitoring trends: role of satellites and imagery data

The space industry is witnessing a rapid increase in satellite launches, providing more competitive services. Data from low-earth orbiting satellites and high-altitude pseudo-satellites have the potential to play a critical role in providing last-mile-connectivity and ensuring access to information, opportunity, and choice for every child. The imagery and data from these constellations of satellites can deliver huge inputs to the trends we track in AI and data science. The overlap of these areas looks to enable insights for research, telecommunications, environmental monitoring, and forecasts, and have enormous potential to support UNICEF programmes.

In 2021-2022, UNICEF Ventures, in collaboration with OGIP, ICTD and DAPM, initiated the development of UNICEF's approach to artificial intelligence (AI).

A draft strategy has been developed through a series of global consultations and workshops with UNICEF staff across programmes, divisions, and regional offices.

The exponential growth of data, adoption of cloud computing infrastructure, and advances in algorithms are leading to widespread adoption of AI across the globe and providing tremendous opportunities for wealth creation. While this adoption so far has been concentrated in the private sector in wealthy countries, we believe that the same technology can also be used to drive outcomes for children as a complement to existing programmes. Concurrently, however, the risks involved with AI adoption can also cause harm to beneficiaries – especially in the absence of globally agreed upon guidelines. Much of the work on AI within inter-governmental organizations has been focused on governance and AI ethics; efforts around adoption of AI for good remain nascent. There is, therefore, a need for a measured, strategic approach where UNICEF can pursue innovations with AI, while being mindful of any negative impacts and providing clear pathways to mitigate risks.

UNICEF has already made initial progress on AI adoption and policy. We have developed policy guidance on children and AI, invested in AI startups through the Venture Fund, and created innovative platforms that leverage AI for UNICEF programmes. This strategy aims to bring a degree of coherence to these existing efforts, learn from challenges, and to move from launching pilot projects to scaling models and introducing AI as a valuable tool.

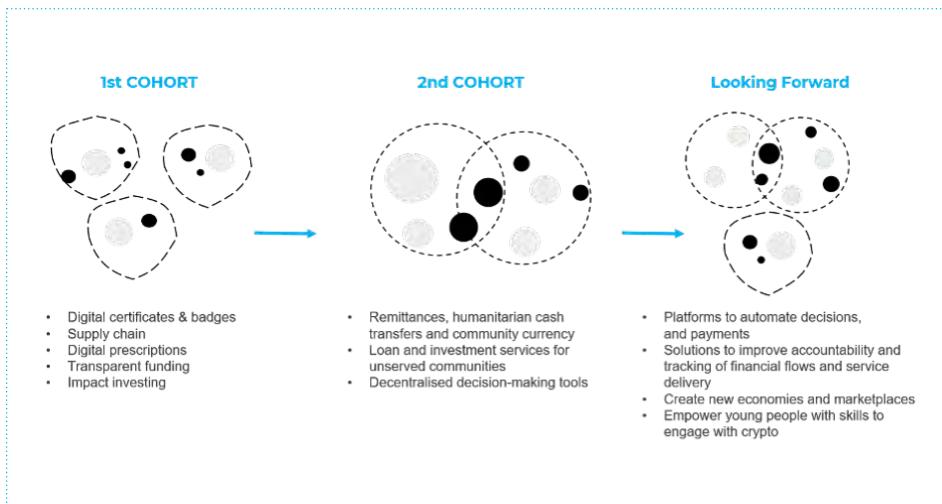


ILLUSTRATIVE EXAMPLE

Developing a call for applications in alignment with the innovation portfolio approach



The Fund, in collaboration with Giga, recently [launched a call for blockchain-based software solutions to build capacity and empower communities](#). Through this call for proposals, we are seeking blockchain solutions that can address problems across a variety of portfolios including youth, climate change, learning and humanitarian portfolios.



Taking lessons learned from the previous blockchain cohorts and internal explorations, the new call for applications prioritises solutions that **improve accountability on service delivery and policies; empower and actively engage young people; improve equity in access to connectivity and the digital world; and grow and improve funding flows.**

Building innovation capacity in fragile countries

There is a need to accelerate progress 2 to 7-fold in order to achieve SDGs related to children. The Funds seeks to create new opportunities by focusing on new markets and their vital needs. Over the years, the Fund has strengthened its presence, reaching 74 of 156 programme countries. This year, the goal is to expand reach and innovation programming to fragile countries and support solutions that respond to the most pressing needs in those contexts, including emergencies.

We will do this by:

- Strengthening of local innovation ecosystems in fragile countries, including supporting UNICEF country offices to conduct landscape mapping of local ecosystem players, and providing support for the building of new partnerships and identification of new local initiatives to support
- Supporting the application of innovative solutions in the context of fragile countries through UNICEF's Country Offices
- Investing in new solutions developed in the context of fragile countries, mainly through UNICEF's Country Office

Evolution of cryptocurrencies presents opportunities for the UNICEF Crypto Fund

When UNICEF originally launched the CryptoFund, the goal of the prototype period was to:

- access untapped resources for UNICEF's mission,
- increase the efficiency and transparency in systems,
- unlock new programme opportunities, create knowledge and leadership around emerging technology, and
- pilot a new platform for monitoring and tracking income and expenditure of the fund.

The goals remain relevant today for UNICEF's continued work in the area of digital assets for which the market capitalization from 2019 to 2022 has increased from USD \$222B to USD \$1.2T, presenting an even bigger fundraising opportunity for UNICEF.

In addition, national governments and central banks around the world are embracing blockchain and/or cryptocurrency in their national systems – whether it be the issuance of a central bank digital currency or adopting cryptocurrency as legal tender. UNICEF is well positioned to work in this new context of digital assets. Cryptocurrencies introduce new possibilities in the context of UNICEF operations, allowing 100% transparency of all transactions – both from donors, but also projects that receive funding – allow the public to see how funds are spent in real-time. Due to this transparency, there is a lower reporting requirement to donors, as they can keep track of UNICEF’s impact as it happens.

As the cryptocurrency industry has evolved, UNICEF Country Offices have expressed their interest in accepting and using cryptocurrency – whether it be to fund innovative solutions in country, or to quickly provide humanitarian support in an emergency context. Given the global nature of cryptocurrencies, they introduce a new way to approach large and complex situations that UNICEF faces, benefiting from the transparency and efficiency that blockchain technology inherent has.

Over the last two and a half years’ the Fund has been prototyping a cryptocurrency denominated pooled fund (the CryptoFund) in support of innovative projects. Based on positive results from the prototype period, the Office of Innovation, along with Treasury and Structured Finance, DFAM hope for the CryptoFund to operate beyond the prototype period, with regular intervals to assess the continuation of the CryptoFund.

Partnerships for pilots at scale

When it comes to partnering for social impact, Fund donors bring much more than financing to the table. They are also sources of innovation, expertise and creativity that enrich the Fund’s efforts to support the growing map of global south frontier tech ventures. In 2021-2022, the Fund welcomed new partners, individual contributions, and pledges aboard, including proceeds from Non-Fungible Tokens (NFT) sales. Among new donors

are DigitalOcean and Xcapit, the first Fund portfolio company that will be contributing back to the Fund.

Looking ahead to 2023 – 2025

Raising a Round: The UNICEF Venture Fund is looking for partners to join its **new round of funding of USD \$20M over the next 3 years and accelerate impact for children**. As a new Fund cycle is set to start in January 2023, running until December 2025, plans are to grow the Fund size and investments in order to provide growth funding, an investment approach that started in December 2021.

Early-stage innovators and startups in the Fund portfolio continue to face challenges in accessing follow-on investment to grow their results and expand their footprint. This phenomenon of the missing middle in financing for the mid-late growth stage of innovation has been well documented and is crucial as it is often the time when viable ideas turn into profit-making businesses, while being characterised by marginally lower rates of financial return inherent to this stage of innovation. **Therefore, the Fund is launching “Raise a Round” to complement and grow its investments by providing follow-on and growth funding that aims to accelerate more promising solutions and position them for sustainable investment** so they can increase third-parties funding.

As development finance only continues to grow in importance, through Raise a Round, the team aims to position the Fund as a go-to instrument for social impact investing, that can eventually lead to green finance and blended finance investments. Raise a Round will also serve to expand partners and investors base by targeting an additional and alternative niche, such as impact investors and high-net worth individuals.

Appendix

Appendix A: Impact Highlights



▶ [Impact Highlight video](#)

VRapeutic (Egypt) has prototype its platform in collaboration with the UNICEF Country Office in Vietnam: video by Lesley Miller, Deputy Representative, UNICEF Vietnam

[Open video link →](#)



▶ [Impact Highlight video](#)

Recently acquired blockchain Cohort investee, **Leaf Global FinTech (Rwanda)**: video by Nat Robinson, Co-Founder, Leaf Global FinTech

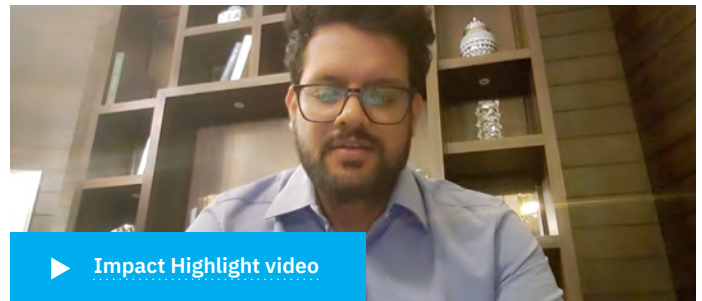
[Open video link →](#)



▶ [Impact Highlight video](#)

Growth Fund investee, **OTTAA**: video by Costa Carlos Guillermo, Co-Founder, Comunicacion Aumentativa (Chile) and team

[Open video link →](#)



▶ [Impact Highlight video](#)

Growth Fund investee, **StaTwig (India)**: video by Sid Chakravorthy, Co-Founder, StaTwig

[Open video link →](#)



▶ [Impact Highlight video](#)

Growth Fund investee, **Thinking Machines (Philippines)** is scaling its solution across 9 countries in Southeast Asia: video by Stephanie Cy, Co-Founder, Thinking Machines

[Open video link →](#)

Appendix B: Results from New and Graduated Venture Fund Companies

Key results from recent Blockchain Cohort Graduates

BX Smart Labs

developed Bloinx, a decentralised app for saving circles. The payments will be done on the blockchain allowing the saving circles to be built regardless of the location of the users. The smart contract will automatise the payments and withdrawals on each period ensuring the users receive their funds.

RESULTS TO DATE

- Continued product development for decentralised app for saving circles
- Conducted pilots with 73 users and collected user feedback
- Commenced the productions of three videos to explain the product to users
- Won 1st place, LATAM Prize, in [Celo's Make Crypto Mobile Hackathon](#)

Rumsan

developed Rahat, a digital cash and voucher assistance (CVA) management system. It uses mobile-based blockchain tokens for emergency response and recovery programs for humanitarian agencies.

RESULTS TO DATE

- Worked on the development of the digital CVA management system; including the aid agency dashboard, native android app for vendors and aid agencies, social mobiliser web app for field staff/social mobiliser, and the NFT Token distribution module.
- Ran a series of mini-pilots reaching 5,000+ beneficiaries and made notable progress on their Open Source milestones.
- Exploring potential pilots with UNICEF Country Offices

Xcapit

developed a platform using blockchain for planning, gamified savings, and wealth management including access to financial services such as interest-bearing accounts, loans, etc.

RESULTS TO DATE

- Completed the development of a crypto wallet and features including a wealth management investment planner, investment product support, and low risk investment product.

- Reached over 500k beneficiaries with their solution and the crypto wallet has over 50,000 users across 85+ countries
- The team has raised a total of \$1.8 m USD in follow-on funding and is actively seeking to raise an additional round
- Certified Digital Public Good

Treejer

is an open protocol connecting funders to rural planters worldwide. It uses smart contracts, DeFi and NFTs to empower local communities who protect forests

[Demo link →](#)

RESULTS TO DATE

- Launched a complicated protocol with near 100% test coverage and internal audits completed, including the development of a dedicated mobile app for tree planters, smart contracts, and web app
- Successful Genesis Launch of their first 10,000 trees (approx 20 ETH)
- Raised \$74k in two quadratic crowdfunding rounds via Gitcoin
- 100k trees committed by planters, 10 countries with active planters, 1400+ contributors supporting on Gitcoin, and 200+ planters from grassroots communities.
- Working in close collaboration with the National Forest Organization in Iran and one of their recent large-scale forest projects in the Zagros region is showing great results.

Kotani Pay

developed a platform that enables users to off-ramp from crypto using a simple interface that does not require the need of internet connectivity or a bank account

RESULTS TO DATE

- Processed over 31,000 transactions, reaching over 15,000 beneficiaries
- Integrated their solution with various partners; (Partners include mobile wallets providers and Implementing Partners)
- Recently closed a fundraising round for \$800,000
- Ran pilots with multiple partners, including WFP and Mercy Corps Ventures

Tilli (Sri Lanka)

is a game-based, AI-powered social-emotional learning tool that teaches 5-10-year-olds the skills needed to stay safe and healthy

OPEN SOURCE IP GENERATED

During the investment period, Tilli will deliver three learning modules related to child online safety skills, including trust, bodies and boundaries, and safety online. The team will enhance the machine learning model achieving 90% accuracy and will reach over 10,000 users. The company will also make the platform available in Tamil and Turkish.

QUARTER 1 PROGRESS SUMMARY

Over the course of the first quarter of their investment period, the Tilli team made progress in the below areas:

- Technical Progress includes alignment of their IDE (Integrated Design Environment) with their Open Source Strategy to quickly localise and deliver content for any language and culture (including color palettes, graphics, and cultural settings/narratives/characters) in a two week timeframe. Onboarding of their game development team and integration of these members with their core technology development team is almost complete.
- Product Co-Creation has been robust with their growing partner school network in Sri Lanka. They have completed 3 Product iterations using Co-Creation inputs from 50+ teachers and 1500+ students in urban and rural settings with and without internet, testing the Tilli classroom interface, homework app and the Tilli physical game. School administrators have articulated Tilli's major positive impact on students post-covid.
- Open Source Strategy development has been aligned with their values of equity and inclusion evidenced by the project charter they developed with their Open Source Mentor. Tilli are focused on application of AGPL license, completion of the code of conduct and contribution guidelines for Tilli, adding to the documentation website, and creation of a pull request workflow. They are planning for the development of resource-poor languages and the cultivation of a global Open Source community that will help support the cost effective localization and scaling of social emotional learning post- Covid. help support the cost effective localization and scaling of social emotional learning post- Covid.

- Partnerships have been growing with opportunities to present a business case for: Dialog Malaysia Market; Union Life Assurance Sri Lanka; JK Innovate Sri Lanka; Committee for Children.

Talk2U (Brazil)

is a behavioral micro-intervention chatbot to impart strategies to users for child online safety, as well as trainings on different types of abuse

OPEN SOURCE IP GENERATED

Talk2U has previously developed child online protection content for UNICEF Brazil and during the investment period with the UNICEF Venture Fund, Talk2U will develop an Open Source chat story on online safety in Portuguese. The company will be developing an original script that can be adapted and scaled across regions. They will also develop a trained algorithm that responds to the subject of child safety.

QUARTER 1 PROGRESS SUMMARY

Over the course of the first quarter of their investment period, the Talk2U team was focused on the learn phase of their project and as part of this phase they successfully closed the desk research report after thoroughly going through digital safety and potential risks for adolescents and youth online, attended 7 events from diverse topics and countries, collected feedback via 200 surveys, and composed interviews with 8 different experts on digital safety representing different areas of work, from Internet Governance to law, from academic research to a UNICEF youth ambassador. As a result of the research conducted during the learn phase, the Talk2U selected Hate Speech as their topic focus for the UNICEF Venture Fund project. Lastly, the Talk2U team drafted a behavioral map and is starting to map behavior change strategies focused on the topic of Hate Speech, setting up the framework for their team to move onto the next stage of their project, the create phase.

Investment focus and initial results AI + DS Cohort 2022

Afrilearn (Nigeria)

has created an application for accessible, adaptive learning based on West-African curricula. The prototype developed includes audio, video, practical quizzes, and class notes for all lessons based on curricula. To date, the company has developed a learning management system, and has 12K users (including 10K student and 500 teachers and parents). They have 4000 active subscriptions

OPEN SOURCE IP GENERATED

During the investment period, the company will develop the artificial intelligence-powered personalised recommendation model. The team will share the model through an Open Source mobile application

Bookbot (Indonesia)

Bookbot Technology is developing a gamified app, a real-time on device speech recognition technology that listens to the child read out loud and provide feedback through pronunciation modelling. Developed a gamified app that provides real-time, on device speech recognition technology. The solution is already available in other languages. Bookbot uses a phonics approach that has seen dramatic gains in UK reading standards from 58% in 2012 to 81% in 2016

OPEN SOURCE IP GENERATED

During the investment period, the company will build out capabilities for Bahasa. The focus will be on improving efficiency of collecting data, model training and development of a windows application. The company has a partnership with INOVASI and will conduct an efficacy study.

Cirrolytix (Philippines)

Cirrolytix is developing a platform for dengue prediction using climate and health data for epidemic management. The company's solution is already a certified DPG and they are working closely with UNICEF Philippines. Cirrolytix have identified parameters for hotspots; developed a ML model combined with weather hotspots

OPEN SOURCE IP GENERATED

During the investment period, the company will test, train, and deploy models for dengue hotspot prediction. The team will also develop a risk framework to test and evaluate model performance. The solution will be delivered through an Open Source web and mobile dashboard.

Portal Telemedicina (Brazil)

is developing a platform that provides reliable, fast, and low-cost diagnostics to over 300 cities in Brazil and Africa by allowing doctors to diagnose online, empowered by artificial intelligence (AI) integrated layer and AI insights for medical providers. The company has developed drivers and data handlers to extract information directly from proprietary medical devices, capable of connecting to over 90% of medical devices on the market. To date, they support 500 hospitals and clinics serving thousands of patients daily in more than 300 cities in Brazil and Africa

OPEN SOURCE IP GENERATED

During the investment period, the company developed a comprehensive system for child development indicators. This will include a Central Database (CD), Smart Child Development Analyser (SCDA), and Monitoring Center (MC), and the team will deliver them as open-source repositories to the community.

Neural Labs (Kenya)

is creating a computer vision and image recognition algorithm to detect diseases in chest X-rays. The company has developed the backend and model architecture. They have now partnered with hospitals to conduct user tests to evaluate the solutions effectiveness

OPEN SOURCE IP GENERATED

During the investment period, the company will conduct a series of evaluations to test and enhance the model's performance. This will be done through clinical trials in partnership with hospitals, and the images collected will be used to further train the model. The focus of the project will include tuberculosis, pneumonia, and breast cancer.

Eyebou (UAE)

is developing an AI tool for virtual eye tests to detect vision disorders in children. The company has conducted eye-screening for 250+ children in Colombia. 57% has children screened reported some kind of vision disorder and they were all referred for treatment no false positives. They have conducted this pilot in partnership with SOS Colombia and support from the UNICEF CO

OPEN SOURCE IP GENERATED

During the investment period, the company will develop the artificial intelligence diagnostic model, to detect any visual acuity issues and front of the eye issues. The model will be trained with data to learn image recognition. They will continue to collect data to enhance model training. Over the year, they will provide screening training to 300 caregivers, and collect 100,000 data points through the screening and by accessing open datasets. The company will deliver an Open Source model optimised for low-resource environments (with limited connectivity) that can be accessed through a smartphone.

Om3ga Solutions (Serbia)

is developing a deep learning speech-to-text solution for Slavic languages, integrated with an a chatbot builder. The app currently supports Serbian, Bosnian, Croatian and Montenegrin, with Russian in development

OPEN SOURCE IP GENERATED

During the investment period, they will develop a subtitler, a text-to-speech application for visually impaired, and integrate their solution with a virtual assistant. Their Open Source web accessibility models and data can be used to make online tools more accessible in local languages. The platform also works offline making it possible for children with disabilities to communicate in remote areas when they are on the move or without internet.

Formative Resilience (India)

is developing a machine learning powered predictive model for monitoring air quality. The solution is delivered using a geographic visualization engine containing layers showing the child population density, and regions with concentrations above the WHO recommended limits. The proof-of-concept model is complemented by local ground sensors (with current implementation in Lima, Peru).

OPEN SOURCE IP GENERATED

During the investment period, the company will enhance the software to continuously ingest open air pollution sensor data, as well as process open geospatial and satellite data to predict global PM2.5 concentrations.

Jobzi (Brazil)

is a data intelligence company that is using information on school location and jobs to predict connectivity. The team is developing a solution to predict school connectivity and study the relation between connectivity and jobs

OPEN SOURCE IP GENERATED

During the investment period, they will develop a model for predicting connectivity on Brazilian schools based on school data and employability data; share a website with their model and study the relation between employability and connectivity data. The company will also enhance with model for schools from other South American countries after a satisfactory level of accuracy is achieve.

Appendix C: Growth Cohort Investment

COHORT 1

Investment focus and results for Growth Investments 2021

Dymaxion Labs

developed the DYMA platform, which surveys large areas using AI-powered geospatial analytics and allows companies, governments, and NGOs access up-to-date, ready to use data to make better decisions that impact their populations.

RESULTS TO DATE

- 20 active users and provides geospatial analytics as a service
- Dymaxion built a predictive model for Bayer Crop science into the platform to quantify the percentage of crops (soy, corn, wheat, barley) affected by floods. Results achieved: 30 million hectares have been processed in Argentina.
- Collaborated with the NGO Techo to map informal settlements in 6 cities of Latin America, covering more than 40,000 km2.
- Collaborated with the Secretary of Habitat to update informal settlements areas in the 32 most populated cities of Argentina

SUMMARY OF WORKPLAN

With the investment from UNICEF's Crypto Fund, they will use these funds to; enhance their platform with additional features, incorporate new imagery sources into the platform for analysis, begin exploring the usage of blockchain's smart contracts and its utilities for automated product delivery and results in validation, and further pilot these new features with identified partners. Specifically, they will be developing and testing models for Crop mapping: in Argentina and Peru Informal settlements: in Chile and Brazil Informal settlements, and flood vulnerability: in Honduras

Ilhasoft (Weni)

developed Bothub, an open platform for training and sharing Natural Language Processing datasets in multiple languages

RESULTS TO DATE

- Weni's application field is extremely wide and is already being used in several contexts, ranging from virtual assistants to humanitarian aid. To date, Weni has 151 accumulated paying customers, 2688 accumulated users on the platform and over 500 publicly available

- datasets. Since 2020 they generated over \$1M in Revenue and served over 2600 unique users and 1.5M beneficiaries.
- 180 languages supported, including BERT support Worked with UNICEF Iraq on UReport; to provide polls in Arabic (U-Report is a social messaging tool and data collection system to improve citizen engagement, inform leaders, and foster positive change)
- Weni currently provides approx. 29% of U-Report digital services for UNICEF globally.

SUMMARY OF WORKPLAN

Weni is working on their major next release, unifying the experience around chat, artificial intelligence and human support through the Weni Platform. This unified platform will provide a solution that makes it easier for UNICEF country/regional offices, as well as other stakeholders working in the field for positive impact for children, to create effective solutions for advocacy, data collection, behavioral change and other applications that can benefit from a chat/A.I. platform. - Weni has already created the unified base for the three pillars of their solution: conversational/flow structures, artificial intelligence and human agents support. With additional funds, Weni will be able to implement additional features

Somleng

provides an efficient and low cost Interactive Voice Response (IVR) and SMS platform, integrated into the RapidPro platform to extend its reach to communities with low literacy levels

RESULTS TO DATE

- Somleng has processed approx. 296 K minutes' worth of registrations and 83.6 K minutes' worth of alerts and is currently being used in various projects, including the EWS in Cambodia, a Cash Disbursement Programme in Somalia and as an information dissemination tool for farmers in Ghana.
- In collaboration with the National Committee of Disaster Management, Somleng's IVR is being used to send out mass automated voice alerts to citizens with vital information on COVID-19 (easily adaptable to new languages)
- Somleng has previously partnered with UNICEF Somalia. And is currently partnering with UNICEF Guatemala powering a program for the prevention of childhood malnutrition using mobile phone technology with more than 7000 users already registered

SUMMARY OF WORKPLAN

Somleng aim to add a new functionality "Carrier Dashboard and API" which aims to open a new market segment and customer base,

specifically by targeting carriers (Telcos/MNOs). By empowering carriers to provide their own cloud communications infrastructure we hope to be able to accelerate onboarding of new customers, and ultimately the impact of Somleng to reach more vulnerable people.

Pixframe

developed a cognitive assessment formed by a series of mini training games to develop cognitive skills powered by an AI algorithm that helps predict children's learning issues. Pixframe is currently part of the Learning Innovation Portfolio and is scaling up a game-based maths learning app with UNICEF Mexico

RESULTS TO DATE

- As of 2021, more than 100,000 (active users in the platform) children are using Towi as a tool to assess and develop their cognitive skills.
- Another tool, MatematIA, was used by 50,000 users in Mexico, with the help of the minister of education.

SUMMARY OF WORKPLAN

Pixframe would use the additional funding to design and develop three new mini-games to develop cognitive skills, develop new features that allow increased usability and scalability in alignment with the nine indicators of the Digital Public Goods Standards. Additionally, they will improve the AI models used with the new data generated to better predict children's learning difficulties. Furthermore, Pixframe will pilot Towi's cognitive assessment with a minimum of 20 schools in at least two different countries with at least one thousand pilot users to detect how they behave on the platform and better predict learning problems in children. Pixframe will collect relevant data and analyse the efficiency of their intervention for predicting learning difficulties and correlations between literacy and AI models and a proposal for ADD severity classification.

StaTwig

ensures quality and safety of products such as vaccines and food by preventing supply-chain failures. StaTwig does this by tracking the products from manufacturers to users, recording vital information about the product's journey such as where it is, how it being handled, its temperature, certifications, to a blockchain that connects all the stakeholders of the supply-chain

RESULTS TO DATE

- StaTwig has deployed Vaccineledger in 27 projects. StaTwig has tracked nearly 12M doses of vaccines, 22.5M kgs of rice, and 3 million recycled bottles through their platform. All these deployments have been through full-scale deployments or pilots, which are moving to full-scale deployments in 2022.
- StaTwig is tracking rice bags from farmers to the beneficiaries of the Telangana state government subsidised food grain program. The program benefits 28.3 million people in the state (India).
- StaTwig has also won the Trinity Challenge 2021, providing StaTwig access to additional funding and resources to scale

in 2022. It targets to scale VaccineLedger deployment to 8 countries in Latin America in partnership with Inter-American Development Bank (IDB).

SUMMARY OF WORKPLAN

StaTwig is developing multiple product lines that include VaccineLedger, CargoLedger, WasteLedger and FoodLedger. Of these product lines, VaccineLedger is the most mature solution, and it solves the current challenges with COVID-19 vaccine deliveries in multiple countries. As deployments of vaccines have increased due to COVID-19 additional requirements from clients have grown. Three of these requirements where funds will be used for are: **Portability** - The ability of VaccineLedger to be deployed on different blockchain protocols based on the supply chain requirements; **Interoperability** - Ability for VaccineLedger instances to communicate to each other even if deployed on different blockchain protocols; **Integrations** - As a result of increased demand from clients to have qualified pre-integrations with some of the most dominant solutions in the supply chains such as SAP, sensor companies such as Roambee and Sensitech and 3PL and packing companies. An API layer for these integrations will be developed using the funds.

Thinking Machines

is a leading data technology consultancy in Southeast Asia with offices in Singapore, Bangkok, and Manila. Thinking Machines' mission is to help organizations make better decisions using data

RESULTS TO DATE

- TM partnered with a wide array of local and international organizations, both in the public and the private sector, and engaged in numerous successful projects employing data strategy, data engineering, machine learning, and data visualization.
- TM now has over 120 full-time employees
- Launched Bangkok office in 2021
- Awarded Best Paper in NeurIPS' Machine Learning for Development (ML4D) workshop, also recognised in other research conferences (International Conference on Machine Learning, International Joint Conference on Artificial Intelligence)
- Formed in-house Sustainability Team as part of commitment to operate as a sustainable business and find market opportunities to support sustainability programs
- Expanded pool of technical partners: Google Cloud, Carto, Mapbox, Snowflake, etc.

SUMMARY OF WORKPLAN

Thinking Machines will scale poverty estimation efforts across South East Asia, conduct air quality research, and build a suite of open-source geospatial analytics tools to enable more organizations to build quality machine learning models for wealth estimation. Key outcomes -Train 9 open-source poverty estimation models across South East Asian countries -Develop an open-source haze detection model trained on Mapillary street images, satellite images, and meteorological data -Create 3 geospatial feature processing pipelines for Oukla, OpenStreetMap, and Google Earth Engine satellite images -Publish 2 journal articles for poverty estimation and haze detection

Cohort 2: Investment focus and results for Growth Investments 2022

Angaza Elimu

has developed a digital learning platform for adaptive assessment, tailored support and works offline in regions with low connectivity

RESULTS TO DATE

- In 2021, student users grew from 9,000 to 30,000 users with an average daily user engagement of 29 minutes
- In 2021 they partnered with UNICEF Kenya Country Office through a pilot program for the GIGA schools and onboarded 85 new schools onto their eLearning platform adding 22961 students and 1309 teachers. The following results were achieved in the pilot:
 - 89% active user students with daily engagement time averaging at 35 minutes per student
 - 24% average improvement in performance with key improvements in Math and Science subjects.
- Achieved 83% accuracy on their adaptive learning model which allows students to learn and assess themselves at their own pace
- Increased partnership, key partners are: Google for Startups (received funding through the Black Founders Fund and support from Google experts) and Liquid Intelligent Technologies (trained students from 22 secondary schools on IoT)

SUMMARY OF WORKPLAN

Angaza will receive will additional funding to go towards software development to enhance student adaptation and teacher

intervention engines to power more personalised learning and amplify student-teacher engagement with the goal of improving learning outcomes. They will also build an educational data mining model to generate actionable insights to power decision-making in the education sector.

Comunicacion Aumentativa

built OTTAA, an AI-powered alternative and augmentative communication (AAC) tool that allows children with disabilities to communicate, express their feelings and basic needs. It uses environmental data and a powerful AI algorithm that in combination with a pictogram-based communication code allows users to create sentences and communicate effectively

RESULTS TO DATE

- 10,000+ of Monthly active users across 11 countries, mostly Spanish speaking. Platform uses environmental data and pictogram-based communication code to generate sentences allowing users to communicate effectively.
- The platform selects 4 options from the approx. 1 million sentences on the platform.
- Goals for 2021 include:
 - 150,000 monthly sentences created on their platform
 - Monthly active users: 20,000 monthly active users

SUMMARY OF WORKPLAN

Comunicacion Aumentativa will receive additional funding to increase their development speed to launch new software features and run a pilot in Latin America to validate the value and impact created through the platform and hardware they have developed. Furthermore, they plan to improve their UI/UX design, add new games to develop & enhance motor capabilities in OTTAA users and a new Natural Language Generator.

Rentradone

detects, classifies and organises the errors and damaged modules in Solar Power Plants using thermal imagery. The objective of the solution is to increase energy efficiency and improve performance of solar farms. They also have developed a solution called AI Agro which improves the quality and productivity of crops through providing actionable insights using UAV imagery for agriculture producers

RESULT TO DATE

Photovoltaic Fault Detector Algorithm

- 5 million panels have been inspected to date, resulting in the indication of, 40.5k failures and energy saved equivalent to the consumption of 6k homes
- 40 jobs created related to repairs of the photovoltaic plants

AI-Agro Precision Agriculture Algorithm

- Certified Digital Public Good
- 200 hectares of grapes, cherries, and corn inspected to date

- Pilot-phase customers have provided feedback that their precision agriculture maps have a significant influence on their production rates and the accuracy of the diseases or problems they've detected was above 95%
- In conversations with the Food And Agriculture Organization to deploy their solution as part of the R&D plan for 2022-2023

SUMMARY OF WORKPLAN

This investment will contribute towards open algorithms for data analysis infrastructure that could be retained in other image processing areas such as population analysis, community management, or emergency response. With the additional funding, the team will enhance their software and hardware, as well as scale to new customers and regions, The team will develop a Mobile/Web CMMS for Agriculture and pilot a new hardware product.

Dronfies

has developed an Open Source Unmanned Traffic Management(UTM) system that provides support to drone operations during emergency situations such as natural disasters, compatible with a large variety of consumer drones. It also provides support to drone delivery operations, such as medical delivery. The solution is deployed by the Uruguayan Civil Aviation Authority. This solution is part of enabling infrastructure that can address portfolio problem statements across all areas where drones can be used, including imagery for humanitarian and natural crises, delivery for health care and other critical supply, or connectivity for emergencies

RESULTS TO DATE

- 3000+ flights coordinated with no accidents and only 3 incidents
- FAA compliant
- Uruguayan Civil Aviation Authority incorporating open-source UTM in the regulatory framework in the coordination of drones in the country
- Current system includes: Operations maps and dashboard; Drone registration & User management; Operation Management (creation, automatic approval, manual approval and modifications) and support for Strategic deconfliction; Email notification to Civil Aviation Authorities about changes in the system; Real time monitoring, alerts & UVRs creation support for tactical deconfliction; Ground station for the integration to the UTM for DJI Drones & Pixhawk (through internet); LoRa trackers for reporting position in low connectivity environments, range between 80-100 km; Licensing GPU/GPL 3.0 for core, MIT for frontend and ground stations

SUMMARY OF WORKPLAN

The investment will support further software development, piloting, and scaling, as well as Open Source community engagement. This funding will support the extension and refinement of their UTM

solution for two use cases: drone delivery and emergency response & recovery. The team will work on integration with other Open-Source technology such as Pixhawk and Ardupilot building and end-to-end solution for drone delivery and enable medical entities and governments to purchase a package that is ready to allow drone delivery in poor infrastructure areas.

Bioverse Labs

empowers indigenous communities to preserve natural resources and identify economically important tree species that can be sustainably managed and harvested. The solution uses drone imagery and machine learning to identify and map non-timber species of trees (e.g., chestnut, copaiba, and Brazil nuts) that are economically viable for supporting traditional modes of generating income. It could be applicable to the climate change portfolio's problem statements

RESULTS TO DATE

- Vectored over 9,240 trees, completing machine learning training
- 97% accuracy on ML models for detection of Brazil Nut Tree
- Authored research paper: Mapping Brazil Nut Trees in Amazonia with WorldView 3 satellite images and convolutional neural networks

SUMMARY OF WORKPLAN

The investment will assist with the scale up the work completed in 2021 that provides logistical support to community cooperatives in the Brazilian Rainforest. The team will also develop, document, and implement replicable processes to manage and leverage Open Source communities and set up an evidence of social impact plan, including social impact KPIs.

Appendix D: Open Source Models and Metrics

Greater alignment between the Open Source mentorship and the Digital Public Goods Standard has enabled more companies to become DPGs

Most solutions from the Growth Cohort were able to fit in a ‘trusted vendor’ archetype where their Open Source product is the trusted open alternative to other proprietary products. The benefits include higher levels of trust with open code and open technology; customisation of products; and incentivised adoption through self-hosting. This approach however creates some challenges:

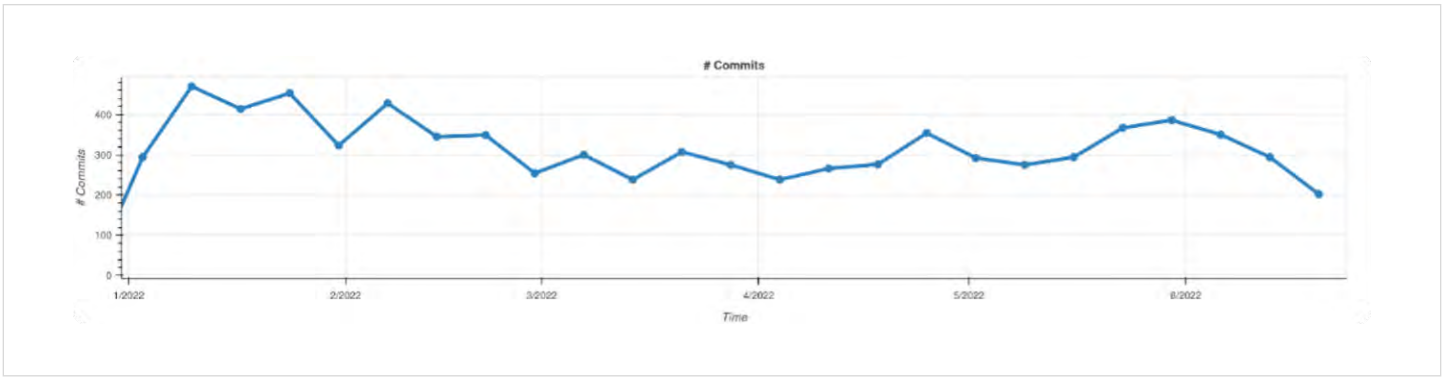
With the ‘trusted vendor’ archetype, it is harder for companies to build a community of developers around their work since there’s often a higher barrier for code contribution. It often requires highly specialised tech skills.

While companies are familiar with Open Source, they continue to face trouble in building a community to get the full benefit of Open Source. A shift in focus to non-technical contributions has helped navigate this issue.

Additionally, we leveraged new software and tools from Bitergia to collect data about Open Source activity generated by Fund portfolio companies. We used the data collected from public Open Source repositories to analyse and understand indicators of sustainability and community growth. The excerpt shown here focuses on three areas: commits, participation in feedback and community reporting, and participation in code contributions. Each area is a proxy to understand sustainability of a project and indicators of community growth. The excerpted charts span all activity created by all graduated and current Fund companies from January 2022 to June 2022 (publishing time).

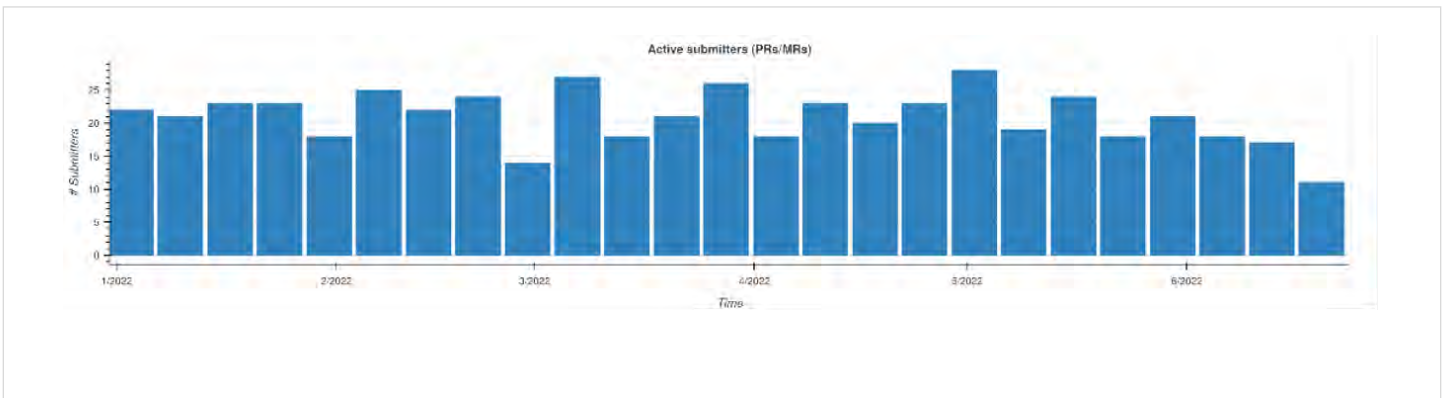
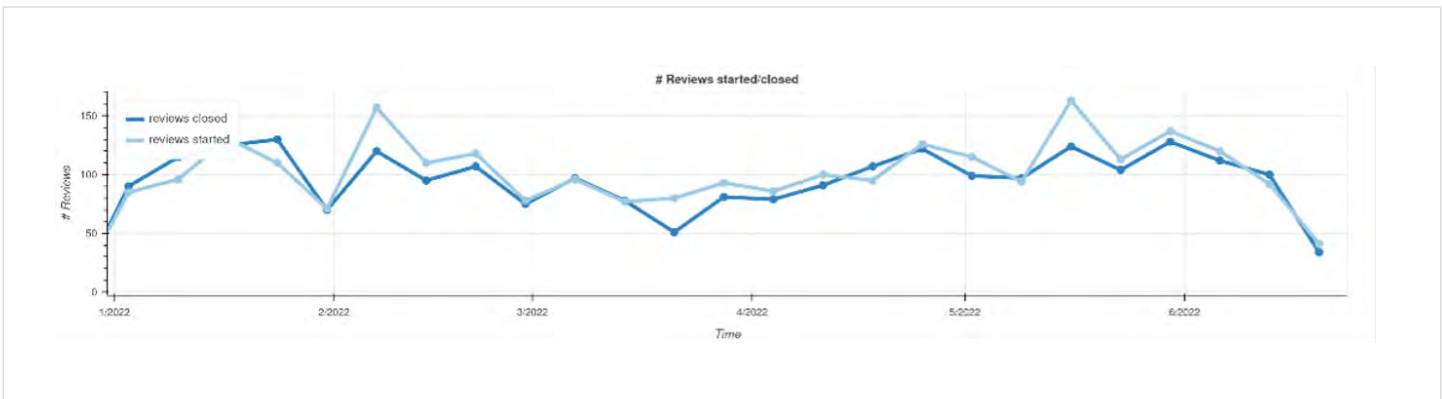
Commits

The following graph shows the number of commits, or logged contributions, to an open source repository managed by a Fund company. While a commit is not a comprehensive measurement of how much work was invested into a project, it does give a signal of general activity and that there is work happening in a project.



Reviews and active submitters

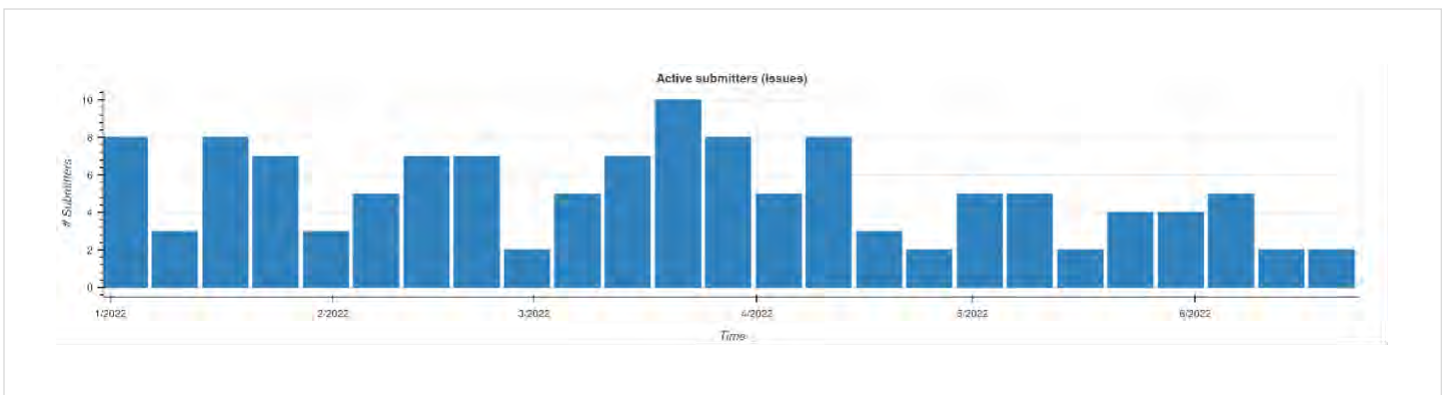
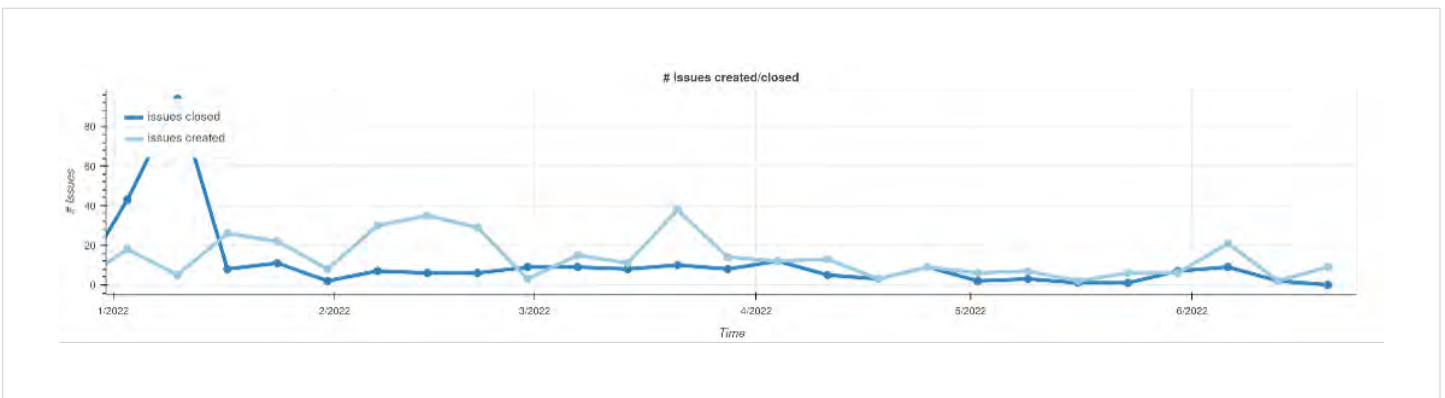
The following two graphs show the number of code reviews started (an open Pull Request) and closed (a merged Pull Request) and the number of active submitters of code changes. These metrics are a proxy to understand how code changes are made in a project (i.e. is there regular peer review of the code), whether code changes are reviewed and processed, and how many people are proposing these changes. This is a proxy to understand team maturity and whether a Fund company is seeing wider engagement and visibility to their work in the form of code contributions.



Issues created/closed and active submitters

Finally, these two graphs show the number of bug reports or feature requests (collectively, “issues”) created and closed and the number of active submitters of issues. These metrics are a proxy to understand the community engagement around a project and how many unique people participate in those activities. This helps us understand sustainability by observing whether an engaged community notices problems with a product and/or has ideas for a product and tries to flag these issues and ideas to the attention of developers. Three insights from these charts:

1. Does the Fund company’s product regularly receiving new bug reports and feature requests?
2. Does the Fund company follow up on bug reports and feature requests by closing them as complete? Do they engage with feedback from their community?
3. How many other people care by flagging issues and ideas to developers? Is there a notable group of contributors outside of the Fund company’s engineering team?



Appendix E: Summary of Pathfinder Country Activities

COUNTRY	ACTIVITIES
<p>Kazakhstan</p>	<p>Kazakhstan has been focusing on strengthening a public private partnership between UNICEF, the Ministry of Education and Astana Hub to support locally developed DPGs. They had conducted a needs assessment in identifying gaps and needs that can be solved with Digital Public Goods (DPGs), including identifying which solutions are already in place or be developed and placed as DPG, curating a database of information that can be leveraged to close the gaps. Also, it's been analysed how government capabilities to create, adopt, procure, and maintain open- source software for the government. This needs assessment then helped continuous conversation on how the government can utilise DPG solutions.</p> <p>The CO has also hosted webinars on DPG, which helped source further solutions, such as Accessible Kazakhstan, which has been vetted and now listed as a DPG in the registry. In Q3/Q4 2022, Kazakhstan will be using the DPG Accelerator Guide to support Ozim to become recognised as a DPG and the DPG Operational Toolkit in conversation with Astana Hub and the Ministry of ICT on adopting the DPG Standard in procurement of open-source technology.</p>
<p>Kyrgyzstan</p>	<p>Designing an online course on inclusive learning in local languages for parents, educators, policymakers, academia, media and the general public to improve knowledge and understanding of the rights and needs for quality inclusive learning, teaching and parenting practice for children with special education needs (SEN) and children with disabilities (CWD) or developmental delays in Kyrgyzstan. The CO is also working on the implementing of a telemedicine service with Intelehealth, which will help reach remote areas in Kyrgyzstan.</p>

COUNTRY	ACTIVITIES
<p>The Philippines</p>	<p>Enhancing project AEDES (Data Science for Dengue virus prediction) to help prioritize interventions and resource allocation using database Management and Automated Data Ingest for Search Trends, Climate, Satellite, and Health Data which entails continuous research on alternate global open data sources. The Philippines have also been closely working with universities and academia on advocating about DPGs, including webinars and teaching an elective at a local university. In the Q3 2021, they have created a Landscape Analysis to map the potential solutions that could be recognised and supported as DPGs. In Q3 2022, The Philippines will be focusing on creating a package of agile and episodic multimedia materials (videos, presentations, webisodes, audio files) based on existing content and resources that can effectively impart information and knowledge about what DPGs are, why they are critical to development results, how to develop them, how to use them, and other topically relevant content to two target audience segments, local innovators (e.g. DOST, startups, academic institutions, accelerator labs, hackathon organisers, individual developers) and local adopters (e.g. international development/humanitarian organizations, government, donors, civil society organizations).</p>
<p>Jordan</p>	<p>Conducted a user testing interview for the DPG Operational Toolkit with the Ministry of Digital Economy and entrepreneurship and supported negotiations with Dot.Jordan to open source their impact jobs platform. Recently, Jordan CO signed a partnership with Shamal Accelerator to conduct a landscape analysis to identify startup solutions that could potentially be DPGs and run an accelerator program supporting startups developing DPG solutions.</p>
<p>Sierra Leone</p>	<p>Hiring a DPG Technical Consultant for Q3/Q4 2022 to provide product development support to selected DPGs created and/or curated by DSTI and provide open-source-community management support to the same projects to strengthen local capacity & talent.</p>

COUNTRY	ACTIVITIES
Ghana	Engaged the local ecosystem through MEST Accelerator program and UNICEF StartupLab, including the Open Source software day which led to 2 DPGs now accessible through the registry, BisaHealth and EduNOSS. Working with the government, AITI-KACE to implement a capacity building program for young developers to contribute to DPGs, and with the national ICT regulator to align procurement policies with the DPG standard.
OECS	Supported a local DPG, Notesmaster, to implement in three countries in partnership with the Ministry of Education. This was particularly timely, as schools moved to online learning during COVID-19, in which Notesmaster provided open, distance, e-learning for teachers and students.
Uzbekistan	Digitalization of UPSHIFT – turning UNISOLVE platform into DPG in collaboration with the Innovation, Technology and Strategy Center under the Ministry of Public Education, where adaptation of UNICEF India CO’s developed the National School Innovation Challenge digital platform to the local context and language in Uzbekistan. Uzbekistan is also working on an existing Social Protection MIS (Single Registry), doing a security assessment of the Social Protection MIS (Single Registry) and development of the new module are in process.
Niger	Support the establishment of an African Drone and Data Academy (ADDA) in Niger with ANSI to develop an additional module for ADDA Niger and translate the existing content modules. These courses will help create a trained drone operations workforce in support of public health initiatives.

COUNTRY	ACTIVITIES
<p>Vietnam</p>	<p>Supported the negotiation with the Ministry of Education and Training and agreed to implement two DPGs, VRapeutic and Global Digital Library (GDL). Through GDL, Vietnam provides access to 160 free, open-source, high-quality, digital early grade reading books in Vietnamese, “underserved” Ethnic Minority languages and sign language accessible to every child in Viet Nam (in partnership with the Ministry of Education and Training). Vietnam has also invested in the contextualization of a Digital Public Good, namely “therapeutic virtual reality” (VRapeutics), tailored to improve the cognitive and social skills of all 6-12-year-old Vietnamese children with ADHD and/or autism (in partnership with the Ministry of Education and Training). They have translated the VR content into Vietnamese, trained therapists and selected children to pilot VRapeutic.</p>



for every child