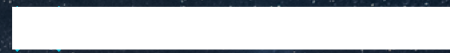


7 Years of Partnering for Inclusive Innovation

arm



unicef 

unicef 
for every child + arm



Table of Contents

- Foreword Arm 3
- Foreword UNICEF 4
- Our Partnership 5
- How it Started 6
- Our Impact 7
- Collaborating and Innovating for Impact 8
 - Ecosystem of Connectivity 10
 - Innovating for an urban world 15
 - Global breadth to country depth 21
- Epilogue 26
- Methodology 27



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page **15**



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page **12**



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page **23**



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page **20**



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page **25**



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page **19**

Foreword Arm



by **Kirsty Gill**
Chief People Officer, Arm

Since 2015 we have been working with UNICEF to unlock the life-changing potential of technology to improve the lives of children in developing countries.

Bringing together diverse ideas, experiences and approaches, this shared-values partnership has had a far greater impact than we imagined when we set out on this journey together.

We have reached over 11 million people and further inspired and enabled those working to ensure equitable access to the positive potential of technology around the world.

From connecting young people to the information and opportunities needed to

fulfill their potential, to examining the role that technology can play in addressing the challenges of rapid urbanization, to working to co-create solutions to the communities hardest hit by climate change, the partnership has catalyzed change across the globe.

We have also explored where and how technology companies can use their strengths to do better business while improving essential services for children. Beyond the partnership, we work to spur the industry and global community to accelerate innovation that can help build a world fit for every child.

We are enormously grateful to the team at UNICEF who brought their expertise in innovating for good and also their enthusiasm and willingness to experiment, fail, learn and create together to ensure that we meet our shared goal of delivering on our belief in the power of technology to build a better world for everyone.



Foreword UNICEF



by **Thomas Davin**
Global Innovation Director
Office of Innovation, UNICEF



Now more than ever children are living in a world where the challenges they face have been compounded by global events. For 75 years, UNICEF has been at the forefront of problem-solving and addressing the challenges that impact children's lives. Alongside children, young people, and their communities and critically through strong partnerships with the private and public sector, we will continue to harness innovations that deliver results for every child everywhere.

UNICEF and Arm have worked side by side, since 2015 and during that time Arm have been a true global champion of innovation for children. As leaders in the tech sector, Arm has been influential and impactful in its reach, expertise and collaboration enabling us to together do more and better for children. There is no better demonstration of this than their critical role in the WEF 2030 vision to harness the power of technology to deliver on the sustainable development goals.

During the seven years of partnership, we have together directly benefited the lives of 596,000 children and their families and 11 million indirectly.

The future simultaneously holds emerging threats, which pose new risks or undermine progress achieved to date, as well as emerging opportunities to accelerate progress in completely new ways. Arm have been vital in bringing together problem-solvers and championing innovations to accelerate positive change for children, young people, and their families.

UNICEF Innovation is committed to discovering, developing, and scaling the solutions that deliver equitable opportunity

for today's generation of children, as well as setting a new pace of inclusive social impact for generations of youth to come. Given our shared goals, UNICEF and Arm will now place a stronger lens on children's learning journeys. Collectively we will achieve the ambition of the UNICEF Learning Innovation Hub in Helsinki, Finland, launched in 2022. This latest UNICEF Office of Innovation hub holds the promise to align the power of today's technology to building alternative learning futures for ALL children, where learning is a fascinating adventure

Applying an innovation lens to the pressing problems facing children will disrupt the devastating impact of the multiple global crises affecting children today and accelerate progress towards sustainable development as a reality. Many thanks to Arm for their continued support in driving our work for and with children forward.

Our Partnership

In an increasingly volatile, uncertain and complex world, children and their families face significant challenges. Children and young people have particular and essential needs. Many lack access to education, information, safe water, sanitation and healthcare. The most vulnerable are at risk from a changing climate with those least responsible disproportionately affected by its impacts. According to UNICEF, **1 billion children** are at extremely high risk to the impacts of climate change.¹

Investing in children and young people is critical to realizing the United Nations Global Goals for Sustainable Development (SDGs) and creating a more equitable world.

At Arm we believe in the power of technology to build a better world for everyone.

Since 2015 Arm has been working with UNICEF and their Office of Innovation and an ecosystem of problem solvers to identify the best ways to harness the power of technology to transform children's lives.

The diverse perspectives of Arm's partners, engineers and developers and the scale and reach of our network present unique opportunities to leverage technology for good. Arm's partnership business model and culture of excellence are core to our social innovation: we lead through others by catalyzing, optimizing and enabling impactful opportunities.

We have explored and improved understanding of the **positive impacts of technology** through:

Research, market analysis and insights from users to identify the best ways technology can improve lives and livelihoods and the business case for investing to solve global challenges.

Global platforms and networks to facilitate new ways of thinking about how technology can deliver social value and to mobilize the global community to act.

Scaling and accelerating **innovative solutions** that deliver social impact and directly benefit children and young people.



¹ Source: www.unicef.org.uk/climaterisk

How it Started

The partnership was launched in 2015 with the **Wearables for Good** challenge, a first example of initiating, supporting and scaling solutions that drive social impact.

The challenge was to design a cost-effective wearable device to address a maternal or child health problem. Open to anyone, the competition received 250 applications from 46 countries and focused attention on how wearable technology can better meet the needs of millions and save lives.

The winners were **Khushi Baby**, a near field communication (NFC) enabled biometric pendant that electronically stores immunization records for infants and **SoaPen**, a wearable soap crayon that encourages hand washing to help prevent diarrheal disease.

Each winner received seed capital and business incubation from UNICEF, Arm, and other partners.

Arm and UNICEF continued to support the winners by providing access to finance, development tools, and mentoring from experts, helping both winners take their inventions from paper to the production line. We also helped Khushi Baby and SoaPen secure additional funding and support from partners such as **Gavi**, the **Vaccine Alliance** and **Johnson & Johnson**.

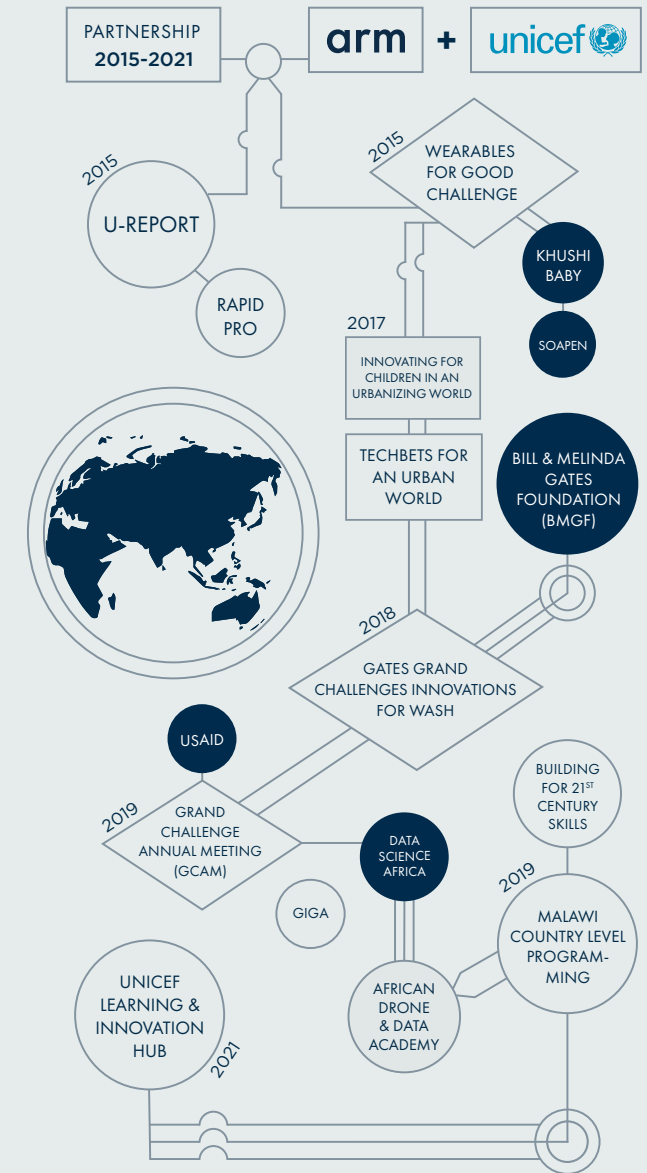
Following the challenge, a collection of open-source designs and concepts was curated and made available to the tech and design communities to encourage further innovation.



Box 1. Khushi Baby

Since the partnership supported the Khushi Baby initiative, **4.2M beneficiaries** in **14K+ villages** have had a digital health touchpoint by **38K+ community health workers** via the Community Health Integrated Platform (CHIP) – a single unified interface for tracking patients and reporting developed by Khushi Baby. In Udaipur District, Rajasthan it has enabled the tracking of **53,000+ antenatal care visits**, **46,000+ child care visits** and **27,000+ child vaccination events**.

Khushi Baby has proven to be **1.66 times more effective** at ensuring infants are **fully immunized by 12 months** than traditional vaccination tracking methods. It has also decreased infant moderate acute malnutrition rates by a factor of 0.26.²



Our Impact

Following the success of Wearables for Good, Arm and UNICEF continued to collaborate, co-create and convene. Through research and working to facilitate new ways of thinking to scale and accelerate inclusive innovation, we have together delivered real social value for children.



Supported **700+** entrepreneurs and young innovators



Enabled **20,000+** interactions with Arm employees



330,000+ people reached by Gates Grand Challenge WASH solutions³



2.5 million+ people with increased connectivity through Giga, Arm being one of the contributors

The partnership has been a cornerstone of Arm's social impact and innovation ecosystem of **60+ external partners.**

Box 2. Responsible Technology

Optimism is crucial to innovation. At Arm, we are confident about the power of technology to transform our world. From accelerating learning to improving access to healthcare to safeguarding the natural environment, technology has a critical role to play in tackling some of the world's greatest challenges.

However, we don't believe that technological advancements are inevitably positive for the world. Technology gives us many benefits, but gains must be evenly distributed, and reach the millions globally whose communities have been historically overlooked.

As an industry, we need to do more to build trust in new technologies to realize the true positive potential for society. For technology to improve lives, user needs must be foremost and collaborative partnerships across the private sector, governments, and civil society are needed to develop equitable and ethical solutions. Responsible technology ensures that everyone can benefit and no one is left behind.

Social Impact delivered through Arm + UNICEF partnership 2015-2021

Direct Reach

596,000

People reached through deep engagement with the partnership

Indirect Reach

11 million

People reached through broader engagement initiatives

Catalyst

17 million

People reached through tech innovations enabled by the partnership

Wider Reach

180 million

People reached through advocacy and sector initiatives

See [methodology section p.27](#) for impact category definitions

Collaborating and Innovating for Impact

The partnership has combined UNICEF's leadership in advocating and delivering for children and their families with Arm's unique innovation and ecosystem approach.

It has allowed UNICEF and Arm to create real and lasting change, through Arm applying business capabilities to complex social problems, adding value in ways that complement the aims of the Office of Innovation. Together we have been creative and tried new ways of working, scaling, innovating and collaborating. Sometimes it worked, sometimes it didn't.

Our objective with this report is to share the highlights of the partnership and the wider network of actors involved. It showcases how our journey working with UNICEF has often mirrored an innovation process: starting with a problem, informed by research and insights and then working and partnering iteratively across UNICEF and Arm's ecosystems to deliver impact and value via inclusive innovation.

From the fundamental importance of connectivity to the challenges of urbanization and the need to champion locally sourced tech solutions, we demonstrate how we have initiated, supported, and scaled solutions to drive social impact.

/01

Ecosystem of connectivity

From enabling young people to connecting every school to the internet.

/02

Innovating for an urban world

From urban insights and market opportunities to Water, sanitation and hygiene (WASH) solutions.

/03

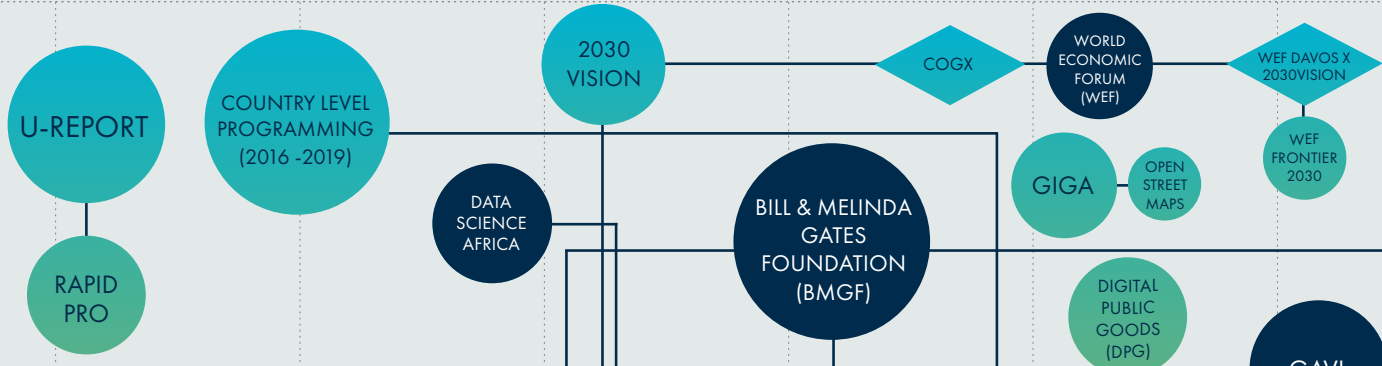
Global breadth to country depth

From improving lives worldwide to local insights and innovation.

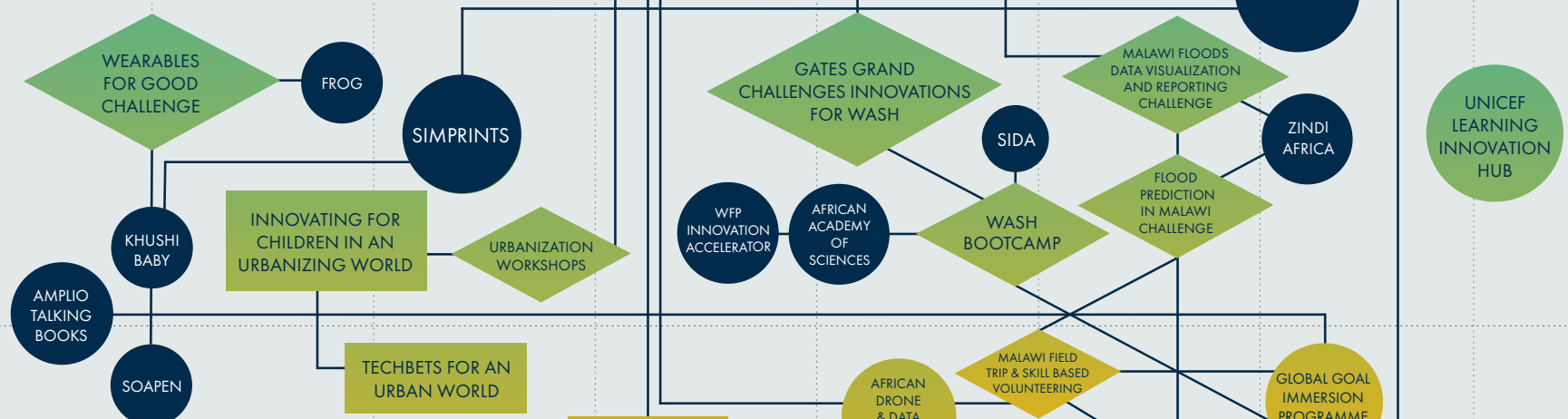


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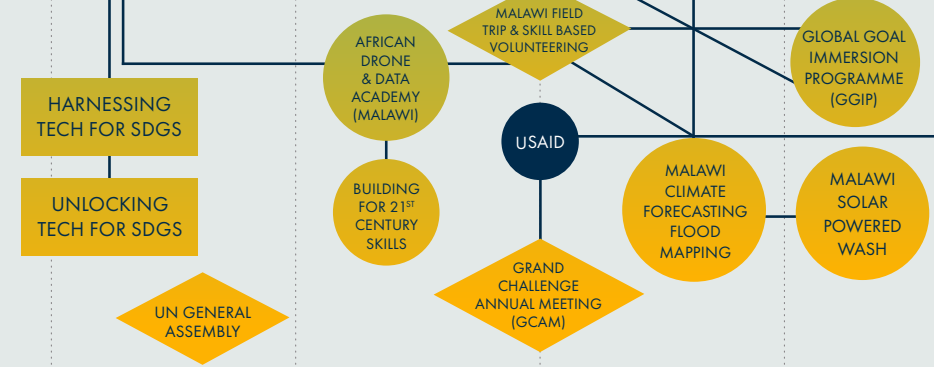
/01
Ecosystem of connectivity



/02
Innovating for an urban world



/03
Global breadth to country depth



Ecosystem of Connectivity

From enabling young people to connecting every school to the internet.

The Arm ecosystem is working to connect everyone everywhere for an equitable world.



© UNICEF/Dejongh

As an industry we have a responsibility to bring the benefits of technology to everyone through better and more equitable access.

Arm's contribution helped enable **Giga** to reach significant milestones, including **connecting 1.1 million students and teachers to the internet**

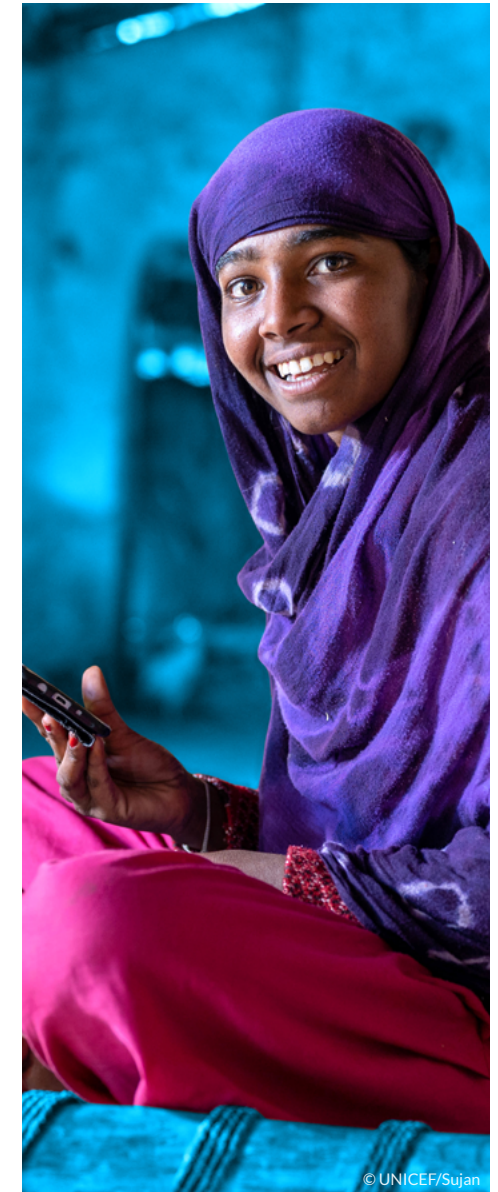


With Arm's support, the U-Report platform scaled up from **11.7 million to 16 million U-Reporters** in **86 countries** between 2020 and 2021

Connectivity is the enabler of opportunity providing access to education, information and resources that children and young people need to thrive. However, connectivity can exacerbate inequality as those without access can be left further behind.

As an industry, we have a responsibility to bring the benefits of technology to everyone through better and more equitable access.

A key focus within the partnership has been to support existing UNICEF initiatives to scale. Arm's funding of these priority scale initiatives has supported tech innovations (such as GIGA, RapidPro, U-report, Digital Public Goods) to reach major milestones. Arm's investment has been fundamental in connecting many more young people to the benefits of technology.



© UNICEF/Sujan

U-Report

Young people are not always consulted or included in the decision-making processes on issues that concern them.

U-Report is a messaging tool that connects young people worldwide and enables them to speak out on issues that affect their lives. It works through simple technologies like social media, websites and mobile phones to create a community where often under-represented perspectives - on topics such as discrimination and child marriage - can be voiced and heard.

This is the first hurricane I've ever been through, and it really scared me. But I don't know how to tell you that the information you sent me was some of the best information I got, and I shared it with my whole family by telephone.

Katy Sabrina Estime, 15, whose home was severely damaged by Hurricane Irma, in Grand Turks, Turks and Caicos Islands

U-Reporters respond to polls, report issues and provide opinions. The data and insights are shared back with communities and to the policymakers making the decisions that affect young people.

Arm's investment has been fundamental to extending U-Report's reach. The funding supported U-Report's integration with



Box 3. Covid Response Chatbot

A new chatbot feature built on top of the U-Report mobile engagement platform facilitated the exchange of lifesaving information during the pandemic for millions of young people across 42 countries. Through their regular communication channels, users were able to ask U-Report questions about Covid-19 and received pre-programmed answers from experts. The Chatbot strengthened the ability to assess needs, tackle misinformation, and share reliable information on where communities could seek assistance. Following the release of COVID-19 vaccines in 2021, the platform continued to function as a particularly useful and timely tool in building vaccine confidence.

Facebook Messenger, WhatsApp and other messaging platforms. Arm has also supported a new website that acts as a platform for greater interaction between young people and the information they need to survive and thrive. A human-centered design process ensured children's voices were central throughout the website design.

U-Report also allows timely life-saving information to be directly communicated to the most vulnerable young people. For example, when a natural disaster is imminent, U-Report can send messages to those at risk.

Previously, it would have taken a week to plan and initiate emergency communications. Arm funded improvements to the core infrastructure of U-Report meant UNICEF can deploy life-saving information within 24 hours. As a result, more than 125,000 people were warned how to protect themselves ahead of **Hurricane Irma**.



COUNTRIES, ACTIVELY USING U-REPORT

93+



USERS WORLDWIDE

22M+



MESSAGES EXCHANGED ACROSS 100+ COUNTRIES

7.5M+



FORMAL AND INFORMAL PARTNERSHIPS

200

Partnerships formed globally with government and civil society organizations to operate U-Report as a public service program (2018)⁴

⁴ Source: <https://ureport.in/>

RapidPro

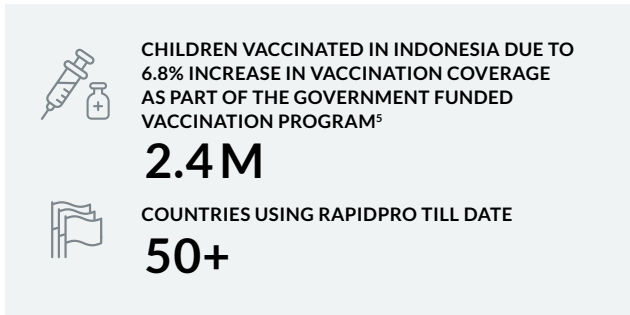
The ability to access credible, up-to-date information about the situation of children is crucial to improving their lives and protecting their rights. In addition, mobile phones are changing the way services, in particular healthcare, are delivered in rural and underserved parts of the world.


Rapid Pro is a free, open source software that allows users anywhere to easily build and scale mobile-based applications. It enables UNICEF and partners to quickly design, pilot and scale real-time data systems that connect directly with a mobile phone user – often without the help of a software developer.

The platform collects data via SMS and other social media channels including WhatsApp, Telegram and Facebook Messenger to enable real-time data collection on vital areas such as health, education, child protection, and emergencies.


Arm supported the expansion of digital health deployments based on RapidPro in **Senegal** and **Sierra Leone**, to reinforce existing health programming and build the foundations for national system change.

In 2021, Arm's support was instrumental to put in place the RapidPro technology platform in Vietnam to promote youth voices using advanced and adolescent-friendly technological platforms, which has been a priority for UNICEF **Vietnam** in child and youth participation. The RapidPro technology portal enabled U-Report Vietnam to continue its outreach



 **CHILDREN VACCINATED IN INDONESIA DUE TO 6.8% INCREASE IN VACCINATION COVERAGE AS PART OF THE GOVERNMENT FUNDED VACCINATION PROGRAM⁵**

2.4M

 **COUNTRIES USING RAPIDPRO TILL DATE**

50+

activities allowing local youth to contribute to the ongoing development agenda that UNICEF is advocating in the country.

In **Indonesia**, Arm supported the use of RapidPro to track in real-time the country's largest-ever measles and rubella vaccination campaign.

Now in use in **50+ countries**, Arm's investment is helping UNICEF build better, more resilient health systems through an iterative approach and by amplifying learnings in one country to others.



It used to take four people to prepare the reporting. Now I can report the children I have immunized from anywhere, any time.

Ms Enung Nurhayati, Immunization coordinator of Puskesmas (Community Health Centres), Indonesia

Innovation process for RapidPro



⁵ Source: www.unicef.org/innovation/rapidpro

Giga

Lack of connectivity restricts educational opportunities: children cannot develop digital skills and access online learning.

The pandemic highlighted the importance of technology to education. For many countries making the switch online was challenging and demonstrated the critical need to accelerate connectivity to provide online education and access to other opportunities for children and local communities.

2.9 billion people do not have access to the Internet.

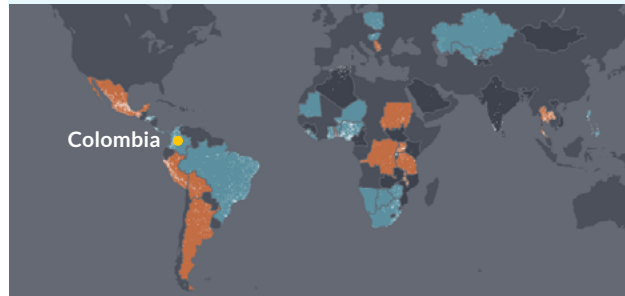
Launched in 2019 by UNICEF and the **International Telecommunication Union (ITU)** Giga aims to connect every school in the world to the Internet. Giga brings together global leaders in finance and technology, including Arm, to accelerate the innovations and investments critical to closing the digital divide.

With help from its partners, Giga has now mapped the location of over 1 million schools and has connectivity data for nearly one third of these.

Inspiring Arm's people to get behind our mission is an important part of our partnership. We have held many mapping volunteering sessions which directly engaged Arm employees over the past few years. Mapping work undertaken by Arm employees from 2019 till 2021 helped plot over 75,000 buildings, home to over 300,000 people.

Box 4. Project Connect

The data foundation for Giga is Project Connect, an initiative to map schools and their connectivity levels, creating a real-time display of access and need. Schools are mapped through machine learning, real-time Internet measurement tools and data collection from the field. Coloured dots mark schools on an open-source map: green for good connectivity; amber for limited; and red where there is no connectivity.



Connecting communities starts with a simple question – Where are they located? Arm employees helped to answer this question through their mapping efforts, and we are grateful for Arm's support!

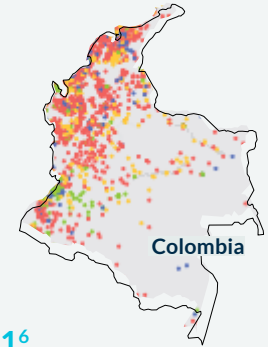
Narora Zurutuza, Data & Tech Lead for GIGA, UNICEF

Connectivity distribution (example)

December 2021

These dots are every school in Colombia colored by the quality of internet access

- Internet speed unknown
- No connectivity
- Moderate (speed <5mb/s)
- Good (speed >5mb/s)



Giga Metrics in 2021⁶



COUNTRIES MAPPED

46



TOTAL SCHOOLS MAPPED

1.1M



SCHOOLS CONNECTED TO THE INTERNET

3000+



STUDENTS AND TEACHERS CONNECTED

1M+



PEOPLE IN SURROUNDING COMMUNITIES WITH INCREASED ACCESS TO THE INTERNET

1.5M+



ARM EMPLOYEES ENGAGED IN MAPPING

700+

Innovating for an urban world

From urban insights and market opportunities to WASH solutions

Our partnership explores how technology can address emerging challenges in the fastest growing cities, especially as they relate to vulnerable children and youth.

Our investment in driving technology, thought leadership and innovation has exposed challenges and opportunities for addressing the needs of children in urban contexts.



By 2030 over half the world's population will be living in megacities, mainly across Africa and Asia. Rapid urbanization presents many challenges, especially for children, and also opportunities.

As cities expand, so does the potential for the effective and efficient application of technology embedded in urban infrastructure, systems and services to deliver equitable impact and value.

Arm's partnership with UNICEF has led to the exposure of opportunities that deliver positive social impacts for children, and their families, in cities. This insight has enabled us to bring in new partners, drive forward innovations and identify new ways of working to address critical issues for children.

Urbanisation in the 21st century⁷

% of total world population living in the cities



55% in 2018 Total world population 7.7 billion



60% in 2030 Total world population 8.5 billion



68% in 2050 Total world population 9.7 billion



85% in 2100 Total world population 10.9 billion



⁷ Source: The Metropolitan Century (OECD, 2015) www.oecd.org/regional/regional-policy/The-Metropolitan-Century-Policy-Highlights%20.pdf

United Nations Department of Economic and Social Affairs (UN DESA, 2019) www.un.org/en/development/desa/population/publications/pdf/popfacts/PopFacts_2019-6.pdf

United Nations Department of Economic and Social Affairs (UN DESA, 2020) www.un.org/development/desa/pd/sites/www.un.org/development.desa.pd/files/undes_pd_2020_popfacts_urbanization_policies.pdf

Innovating for Children in an Urbanizing World: a use-case handbook

The lives and futures of children and youth will be critically defined by the shape that cities take. There is an urgent need for innovating on behalf of young people in the context of a rapidly urbanizing world.

In partnership with Arm, UNICEF developed in 2017 a handbook: **Innovating for Children in an Urbanizing World** which frames the need and opportunities for urban technology. The research identified five priority areas for children across many developing urban contexts: infrastructure, essential services (health and education), human mobility, violence and hazards, and connectivity.

The handbook provides a blueprint for designing and implementing technology-based solutions in order to improve children's lives, recognizing that technology is increasingly embedded into the physical infrastructure, operational systems and networks, individual interactions and socio-economic institutions that make up today's cities.

The objective was to generate insights and a knowledge base from which the partnership could launch interventions. Notably, the research established unifying and coordinating frameworks for any and all working at the nexus of urbanization, sustainable development and technology.



Box 5. Urbanization Workshops

Arm supported UNICEF innovation team workshops including one at the **Bill and Melinda Gates Foundation, Grand Challenges Annual Meeting 2017**. The workshops were held to share our use-case handbook insights to gather feedback. Participants were encouraged to work together, actively engage, think creatively, and ideate. These workshops were critical to sharpening the focus of the handbook and to ensuring that its content, language, and guidance resonated with the appropriate audiences.



Urban Tech Bets

The urbanization use-cases demonstrated the promise for emerging technology solutions to deliver social impact across various development priorities - from access to essential services to emergency response. However, the business rationale for tech actors to invest in social solutions had not been well captured.

Arm and UNICEF worked with **Dalberg Advisors** and **Dalberg's Design Impact Group** to complete user-level research and market analysis in Jakarta, Nairobi, and Mexico City. These insights helped identify the most exciting opportunities for technology actors to grow their markets through delivering positive social impacts for children and their families.

Tech Bets for an Urban World identified six tech bets that could deliver **\$100 billion profit** to improve outcomes for children and their families. These include blended learning, multi-modal skilling, smart recruiting for informal economy workers, smart metering for water, emergency response systems, and commuter ride sharing.

6 Tech Bets⁸



Digital Learning

Technology should enhance rather than replace teachers.



Multi-Modal Skilling

Impact on employment outcomes is the central goal.



Smart Recruiting

Platforms need to fight discrimination.



Water Metering

Customer data should be stored and used appropriately.



Emergency Response

Minimum standards are needed for emergency care and transport.



Commuter Ride-Sharing

Safety of riders is the first priority.

Box 6. ArmIdeas Sustainability Challenge

UNICEF, ArmIdeas and the Arm Sustainability teams partnered to launch the ArmIdeas Sustainability Challenge in 2018. The aim was to inspire Arm employees to invent something to address one of the six tech bets using **Arm-based tools or technologies**. Sixteen teams submitted video applications from a range of countries. The two winners were:

Waste Aware (Bangalore): a simple implementation using a micro:bit that alerts users on their resource consumption daily, that can be applied to water, wet waste and plastic waste.

Project Swarm (UK): Rural community-managed water sensors for piped systems.



Grand Challenges Exploration: Innovations for WASH in urban settings

Smart water metering through IT networks of sensors and meters is an essential technology that can improve access to clean, affordable water.⁹

The Urban Tech Bets research identified a sizable market opportunity for water metering and exposed the potential to drive further investments in digital technology-based solutions to improve access to water, sanitation and hygiene (WASH).

Lack of access to safely managed sanitation services affects over 1 billion people in urban areas, and over 600m in urban areas lack access to safely managed water services. Moreover, diseases linked to unsafe water are among the leading causes of death in children under five.



In 2018 we extended our partnership to include the Bill & Melinda Gates Foundation and African Academy of Sciences and launched a global call for Digital Innovations for Water Sanitation and Hygiene Solutions in Urban Environments as a **Gates Grand Challenge Exploration** - this was the first Grand Challenge to include a private sector partner.

The process was inclusive with applications blind reviewed. The aim was to nurture the idea that 'great ideas can come from anywhere' and encourage the involvement of solutions from the most affected communities.

SUBMISSIONS FROM 47 COUNTRIES

547

FINALISTS SHORTLISTED TO RECEIVE \$100,000 SEED FUNDING

15

TEAMS SELECTED TO ATTEND AN INNOVATION ACCELERATOR BOOTCAMP

8

NUMBER OF PEOPLE REACHED BY SOLUTIONS DEVELOPED BY TEAMS PARTICIPATING IN THE COMPETITION¹⁰

300,000

ARM EMPLOYEES THAT WERE ACTIVELY ENGAGED IN THE PROJECT

12

⁹ Source: Tech Bets for an Urban World Report (2017) <https://urbantechbets.org/water-metering>

¹⁰ Source: Arm-Unicef Year 5 Report

Eight were selected to attend a **WASH Bootcamp** where they could work with experts and mentors to develop and scale their ideas. These included a project in the Ivory Coast with a platform to connect people in slums to formal finance to afford access to improved toilets and a solar powered water ozonation system in Kenya to bring clean drinking water to communities

Together, we brought in further partners and expertise: the **African Academy of Sciences, Sida and the WFP Innovation Accelerator** to create a high-energy, hands-on business incubation program for the grantees.

The projects at WASH Bootcamp impressed me by how they combine an economically sustainable business with the aim of improving society in a very direct way. Some of these projects are a perfect bench test for next-generation devices and demonstrate how cost, durability, energy efficiency and usability are essential in rudimentary environments.

Hector Montaner, Architecture Engineer, Arm

Arm and partners provided mentoring to help attendees:

- Make connections and establish long-term strategic partnerships.
- Operate sustainably and autonomously after the program.
- Understand funding options to scale and sustainable financing.



Box 7. Grantee - Pit Vidura, Sewage Demand Clustering Pump

In Kigali, Rwanda, most people rely on pit latrines or septic tanks as their primary form of sanitation. These need to be emptied regularly. However, many low-income households can't afford the waste removal services provided by trucking companies. Pit Vidura is a sanitation logistics company that provides a safe and affordable pit latrine emptying service to low-income households. It uses a pit to road pump and can reach houses inaccessible to the large emptying trucks.

Pit Vidura team's challenge was to launch a digital platform that will cluster households by geographical area and use SMS messaging to stimulate demand and improve coordination of service requests for its direct pit-to-road pumping services. The platform enables households to invite neighbors to join a cluster that then pays a reduced rate for emptying. Furthermore, the system shares educational messages explaining the negative impacts of manual dumping of fecal sludge to promote behavior change.

PEOPLE DIRECTLY REACHED BY THE WASH SOLUTIONS¹¹

110,000+

RESIDENTS SERVED BY FRESH LIFE KENYA TOILETS

104,000

LOW-INCOME HOUSEHOLDS MANAGING WASTE THROUGH PIT VIDURA, RWANDA

1200

HOUSEHOLDS REACHED BY SANIDIGS, UGANDA

1844

We really enjoyed working with the Arm team, especially our mentor. The bootcamp helped us define the user journey, the pain points and the opportunities which we shaped into our product design.

Experts at Arm helped us work through problems in a way that is just not possible in our normal operations.

Rachel Sklar, Executive Director, Pit Vidura

Global breadth to country

depth

From improving lives worldwide to local insights and innovation.

Providing support to those working locally to design context-appropriate solutions informed by user needs has the potential to create a deep and lasting impact.



Our work with UNICEF has provided many opportunities to improve lives worldwide.



We have supported projects globally including developing a youth-led innovation lab in Vietnam, creating a digital innovation incubation program for adolescents in Indonesia, connecting youth to job opportunities in Brazil and designing a Ger to reduce indoor air pollution in Mongolia.

These digital programs reached thousands and gave us global reach and impact. But,

at the same time, we recognized that depth in our portfolio was also needed and would provide us with more scope to apply our expertise. So in 2019, we focused our country level programming with UNICEF specifically on Malawi. In 2019, funding was through the Office of Innovation (OOI) and in 2021, this funding went directly to the Malawi Country Office.

Country Insights

In 2019 UNICEF Malawi invited Arm to see first-hand the challenges the country faces and consider how technology could provide solutions. **The Malawi Field Trip** gave Arm leaders a chance to see the everyday reality of communities experiencing inequality and climate change and work with experts to co-create solutions.

The UNICEF Malawi Digital Innovation team provides best-in-class innovation for children combining low and high technology to help communities develop sustainable solutions. The approach taken is particularly compatible with Arm: technically advanced, with enthusiasm for exploration, innovation and 'live lab' activities.

Only 13.1% of Malawi's population of 17.1 million have access to the Internet, one of the lowest in the world.¹²

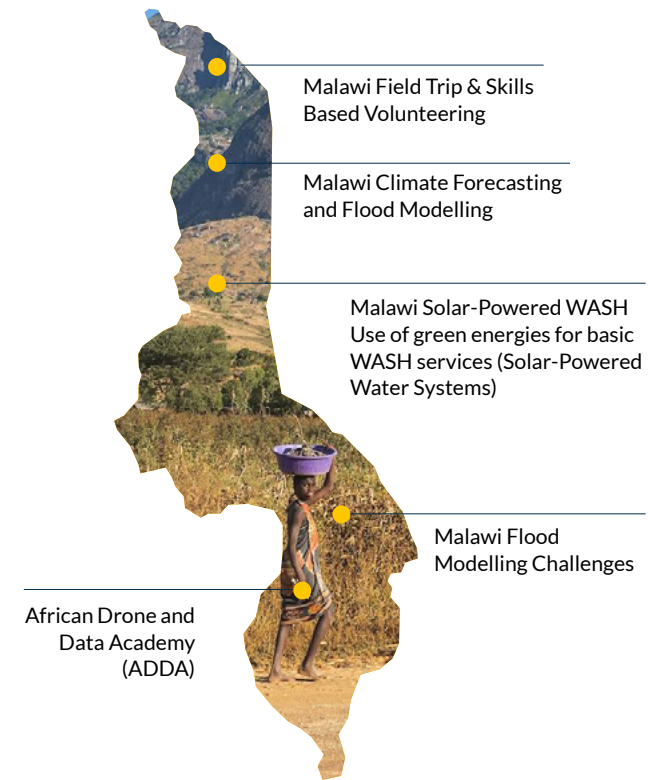
Malawi is one of the world's poorest nations, with very low technological adoption and connectivity and a predominantly rural population. The government, however, is forward thinking and leading in the use of technology.

During our week in Malawi, Arm colleagues saw the devastation caused by floods, the community's resilience and how vital early warning systems and messaging services such as U-Report are for disaster preparedness and response. They visited an air corridor to test the potential of drones to deliver essential and emergency services and learnt more about the challenges involved with implementing such technology. Finally, Arm met with students from the African Data and Drone Academy to



learn about the problems they are trying to solve and how Arm could help them design solutions.

Since the field trip Covid-19 has brought further challenges. Technology alone cannot solve the complex challenges that countries such as Malawi face, however, the application of advanced and green technologies, data science, digital learning, and skill-building have the potential to strengthen communities. Furthermore, providing support and networks to those working locally to design context-appropriate solutions informed by user needs has the potential to create a deep and lasting impact.



The week we spent in Malawi showed how globally sourced, locally implemented innovation partnerships can deliver social impact at scale, made possible by organisations like UNICEF who have the infrastructure and relationships in place to deliver programs on the ground.

Graham Budd, ex-COO, Arm

¹² Source: International Communications Union (ITU), 2021



It was thrilling to see Arm-based technology in action, and witness first-hand its lifesaving potential.

It was also inspiring to see how partnership and collaboration can accelerate innovation, even in the most difficult settings.

Louise Paul, Developer Program Manager, Arm

African Data and Drone Academy

For remote areas and regions with complex geography drones hold the potential to improve vaccine delivery, increase connectivity in hard to reach areas and provide aerial imaging for better preparedness and response in emergencies. However, capacity development is needed in order to seize the opportunities offered by drone and data technology.

In 2020 UNICEF established the first **African Drone and Data Academy (ADDA)** as a center of excellence to equip young people with the expertise to tackle the problems that affect them in their communities.

According to UNICEF's guidelines, ADDA strategically focuses on citizens of African countries, 18-24 years old, to optimise impact and ensure that no child is left behind.

Students learn everything from building and deploying low-cost drone technology, to getting drone pilot licenses and becoming experts in maintenance and repair. This local knowledge and training is critical to enabling scalable deployment of drone technology.

How could we build, strengthen and amplify the ecosystem of problem solvers by helping ADDA students connect with others globally to develop their ideas.

Arm contributed to financing the improvement, accreditation, and delivery of the ADDA curriculum, student scholarships, rental equipment, and faculty salaries. During the pandemic

Arm supported the development of a cost-effective learning program that combines traditional and virtual learning.

The **ADDA blended mentorship program** - a skills based volunteering opportunity - allows select Arm employees to remotely mentor and coach students. A survey administered to track ADDA students post graduation, in 2021, showed that 59% of the students confirmed that being graduates of the program improved their performance at their current positions (job, volunteering, internship, school etc.)¹³



STUDENTS ENROLLED IN 4 COURSES¹⁴

886



STUDENTS GRADUATED

506



FEMALE STUDENTS IN EACH COHORT

60%



ADDA ALUMNI COUNTRIES OF ORIGIN

25

¹³ Source: Unicef, 2021

¹⁴ Source: Unicef and Arm Partnership Report 2021

Flood Prediction and Management

Malawi is susceptible to extreme weather events and these events are increasing in frequency and impact. Floods and droughts are the leading cause of chronic food security in Malawi.¹⁵

Over the past five decades, Malawi has experienced more than 19 major floods and seven droughts, with these events increasing in frequency, magnitude and scope over the years.¹⁶

Accurate flood modeling and risk forecasting are critical to building climate-resilient communities.

Working in collaboration with the UNICEF Malawi Country Office, in 2019 Arm began to support work ensuring that communities in flood prone districts are less reached by extreme weather events and have climate resilient water systems.

Arm funded work to identify flood-prone areas, vulnerable households and infrastructure and the inputs needed to develop of a comprehensive flood hazard model. The aim is to ensure that when the next flood hits, Malawi will be better prepared and able to respond and evacuate more quickly, thus saving livelihoods and lives.

The flood modeling and visualization challenge was also put to developers on **Zindi** - a community of data scientists fostering collective knowledge and expertise to solve Africa's most tenacious challenges.

Two challenges were organized: the first was on flood prediction with an objective to build a machine learning model that helps predict the location and extent of floods in

southern Malawi, the second was a data visualization and report challenge to generate insights on the impacts of the 2015 flooding. The best solutions were presented to the Malawian government to support policy making and planning.



© UNICEF/Malawi/Lameck Luhanga

Box 8. Solar Powered Water Systems

With Arm's investment, UNICEF scaled up climate-resilient water systems sourced from deep aquifers, powered by solar energy. Water supply systems installed in three schools resulted in over 11,000 people in flood and drought-prone districts having access to safe water and WASH services. In addition, installation of remote satellite-based monitoring systems can provide real-time data on water flow. Arm's feedback on the systems and platform for data transmission is essential for improving this new technology.

Zindi Africa Challenges¹⁷

- #1 Flood Prediction in Malawi
- #2 Malawi Floods Data Visualization and Reporting



DATA SCIENTISTS ENROLLED

1,559



DATA SCIENTISTS ON THE LEADER BOARD

477



SUBMISSIONS

20,157



WEBPAGE ENGAGEMENT

453,491



COUNTRIES VIEWING THE CHALLENGE

121

The competition between the teams where everyone wants to be on the top of the leader board and give the best solution kept us motivated all the time.

Just4Fun Team,
Fifth Place on the Leader Board
of the Zindi Africa Challenges

15 Source: Arm and Unicef Partnership Report 2021

16 Source: Malawi 2019 Floods Post Disaster Needs Assessment Report www.unicef.org/malawi/reports/malawi-2019-floods-post-disaster-needs-assessment-report

17 Source: Arm

Epilogue



by *Fran Baker*
Global Social Impact and
Innovation Lead, Arm

Arm technology is at the heart of a computing and connectivity revolution transforming how people live and businesses operate.

For technology to be useful for our collective futures it must exist to improve every life, particularly the most vulnerable in society. That is why our partnership with the Office of Innovation at UNICEF - working together to unleash the power of technology to transform the lives of children - has been so important.

Combining our business expertise and resources with UNICEF's desire to create groundbreaking change for children, we have developed and scaled technology-driven solutions that have improved the lives of millions of children and their families around the world. Of this, we are immensely proud.

In partnership, we have discovered and created new applications of technology to address the problems children and communities face accessing essential services. We have delivered direct impact on the ground through investments in relevant program areas. In addition, we have used our unique positions and convening power to inspire additional solutions and investment, going beyond our direct ecosystems to highlight the central role technology can play in achieving a better world for all. Our advocacy has provided a powerful message to support technology for good and consider new markets and customers that have been overlooked.

How our people at Arm have been inspired to get behind the mission to innovate for impact has been equally, if not more, important. Arm employees possess a unique set of skills that have been vital to the success of our partnership. We have kept Arm colleagues



engaged through communications and events and by providing exciting opportunities to become actively involved to help us deliver impact.

At the heart of our business are people who push the boundaries, accomplish great things, and embrace the opportunity of innovation. Within our ecosystem and through our collaborative partnerships, we can aim high and work to make sure the world is more connected and that lives are improved. Most importantly, we can help ensure that technology allows the youngest in society to fulfill their potential and gives them every opportunity to thrive.

Methodology

This section details the challenges, assumptions and methodology of the reach figures and categories represented in this report.

Since its founding, Arm has enabled entrepreneurs and catalysed innovations. Arm's Social Impact and Innovation strategy extends that approach to reach those for whom technology is not yet designed and who are not yet benefitting from its positive potential. This approach provides a broad variety of impact opportunities. As a result, it is challenging to apply standard impact metrics across all partners and initiatives but we still wanted to ensure transparency in how we manage, measure and report on social impact.

Social impact is hard to measure and "reach" is the best metric for consistently measuring across initiatives and partners.

We took the approach of breaking down the numbers into four (4) major reach categories to demonstrate the depth and breadth of engagement, as well as highlighting the partnership's role in influencing the sector and contributing to projects which have a wider reach. These categories are representative of Arm's positioning as an enabler and supporter of innovation and technology that impacts lives.

With this approach, we have tried to be precise and transparent about the true outcomes of the Arm-Unicef partnership. For example, it allows us to distinguish the reach of long-term investment in education from short-term engagement with a social media post. Also, we are able to be clear about what aspects we and our partners deliver *directly* or have *enabled* in other words for which we are not directly responsible.

The breadth of our *investments* and the complexity of social impact measurement make *reach* the right approach. The majority of numbers presented in this report are estimates and are as accurate as we could make them, calculated with and approved by our partners.

Categorisation of Reach

The following are the assumptions made to determine exactly what numbers to allocate to each reach category per initiative:

1. Direct Reach

- Defined by a first degree of engagement and/or participation in Arm-funded programs
- Impact that would not have been possible without Arm's support
- Only counts Arm beneficiaries: "those for whom technology is not yet designed and who are not yet benefitting from the positive potential of technology"

2. Indirect Reach

- Breadth of engagement: beneficiaries one degree removed from the direct action or intervention
- Impact that would have been unlikely without Arm's support
- Broader Unicef initiatives in which Arm is one of a number of supporters / stakeholders (e.g. U-report, RapidPro)
- Only counts Arm beneficiaries: "those for whom technology is not yet designed and

who are not yet benefitting from the positive potential of technology"

3. Catalyst (enabling or supporting innovation)

- Reach to "non-target beneficiaries" (eg: tech-savvy innovators) who are developing solutions that impact the lives of "target beneficiaries"
- Includes reach achieved outside the scope of the Unicef-Arm partnership but related to it (e.g. Khushi Baby)
- Reach of initiatives to which Arm contributed with others and where at least some reach/ impact is likely to have happened without Arm
- This category includes Arm's target beneficiaries as well as the innovators, entrepreneurs or solution providers supported by Arm doing work that will positively impact the lives of our target beneficiaries

4. Wider reach (advocacy and sector influence)

- Reach to "non-target beneficiaries" (ie: innovators, policy-makers, general public) who may or may not be developing solutions that impact the lives of "target beneficiaries"
- Includes the reach of publications/ communications based on metrics like downloads and page views (e.g. Tech Bets Research)
- Includes attendees and viewers of events and tech sector gatherings (e.g. 2030 Vision, Global Goals events)

Employee Engagement Metrics

The term "20,000+ interactions with Arm employees" is used in the report to communicate the total number of touchpoints (passive and active) that the partnership has had with Arm employees from 2015 till 2021. It is not the number of employees but the number of times that they have engaged with the partnership.

Looking forward, Attribution is key

Our experiences with the Arm-Unicef partnership and our wide range of stakeholders and contributors have informed the design of Arm's new Social Impact and Innovation Measurement & Evaluation Framework (MEF).

Going forward, to be more precise and timely about reach and impact attribution, we will work with our partners to define, measure and report the impact we achieve together. We are eager to measure inequality impact at a programmatic level and to develop proxy indicators to bridge from reach to inequality reductions based on clear and vetted impact pathways and theories of change. Furthermore, where possible, we hope to be able to measure our impact on inequality at source—an exciting and valuable challenge.

We will be validating our impact measurement methodology with experts and stakeholders and are open to any and all feedback on how we can improve. You can email Arm's Social Impact and Innovation team at: sustainability@arm.com. Thanks in advance.