DIGITAL UNICEF

Accelerating Results for Children with Technology and Digital Innovation

UNICEF
Technology for Development Report
INFORMATION COMMUNICATION AND TECHNOLOGY DIVISION

Foreword

Over the last few years, there has been increasing recognition of the critical role of digital innovation and technology for development to UNICEF programming and accelerating support to the Sustainable Development Goals. With the global emergence of the coronavirus pandemic in early 2020, digital development has become an integral component of UNICEF's work as national programmes shifted to distance and remote means of delivery.

With the recent move to transform the Information and Communication Technology Division (ICTD) to an external facing and field-focused digital programming support function, UNICEF is well positioned to navigate this new digital programme environment, and has taken a powerful step towards creating an organizational culture in support of digital innovation and Technology for Development (T4D) that informs every aspect of our work for children.

The new T4D function, established in 2017, plays a pivotal role in this new digital programming environment. And in just three years, that role has been recognized as a critical enabler of digital innovation in UNICEF. According to the 2019 Evaluation of Innovation in UNICEF, this new approach is widely recognized and appreciated across the organization.

Technology for Development (T4D) staff are not only bringing technologies and digital innovations to the table; we work with national counterparts and programme and planning staff to think strategically and inter-sectorally about how the needs of children can be met, and gaps breached, through the use of technology as an enabler. We do not seek to disrupt, but rather, to build on and align with existing national systems, and to strengthen national capacities to deliver programmes more effectively and efficiently with the support of technology.

Central to our work are our partnerships within and outside of UNICEF that help enable new ways of programming so that national counterparts are able to make progress on national goals and priorities with the support of digital solutions.

This report and the achievements described within are a testament to that commitment to our wide-ranging partnerships. The examples of our work that you will read about in the following pages underscore the power of the collaborative approach that UNICEF – through technology for development – has taken to enable and deliver life-saving services and advance the rights of children.

Daniel Couture
UNICEF Chief Information Officer

Content

Part 1: Executive Summary

Technology for development and digital innovation – and the practice of exploring new ways of delivering programmes with new partners and technologies – is increasingly recognized as crucial to meeting the Sustainable Development Goals (SDGs) and the promise of the 2030 Agenda for Sustainable Development.

At UNICEF, the Technology for Development (T4D) function within the Information and Communication Technology Division (ICTD) provides advisory, implementation and quality assurance services to programmes on technology and digital innovation in UNICEF, and leadership on digital innovation. It helps to identify the most promising technologies and digital innovations for application in different contexts, supporting UNICEF programmes to adopt, adapt and scale up the approaches that are most useful, and to quickly identify those that are not. It also helps to institutionalize those technologies and digital innovations that show promise and are ready to be mainstreamed, in close collaboration with national partners, and in support of national goals and sectoral priorities, the UNICEF Strategic Plan 2018–2021 and the SDGs.

In the first three years of the Strategic Plan, ICTD has had a powerful impact on scaling digital innovation and accelerating results for children across the organization. To date, more than 1,400 T4D and innovation initiatives have been catalogued through INVENT – the global Technology for Development and Innovations Inventory – which provides a view of the universe of T4D initiatives by Strategic Plan Goal Area, Stage and Scale. These initiatives span UNICEF programmes across the world and address children's health, nutrition, education, protection, access to water, sanitation and hygiene, and inclusion.

In health, nutrition and early childhood development, UNICEF has harnessed the power of ICT to support countries to ensure that every child survives and thrives. That means bringing together a multi-sectoral team to use technology, digital innovation and human-centred design to strengthen health systems and the health system enabling environment. For example, in Pakistan, UNICEF has supported the government to use real-time monitoring to strengthen immunization services. The use of the open-source technology, RapidPro, enabled service delivery that helped providers vaccinate more than 37 million children against measles in 2018, according to government reports.

UNICEF also recognizes the acute need for innovation using real-time monitoring. Hard-to-reach rural communities are now able to report changes in WASH infrastructure functionality via SMS directly to government extension workers, improving the time it takes to make corrective improvements and deliver life-saving services.

The employment of ICTs is also integral to UNICEF's effort to provide every child with an equitable chance in life. In Yemen, that includes supporting the unconditional emergency cash transfer project, which is serving about one third of the country's population. Given the complexity of the operation, UNICEF is using Yumnn, an information management system built to contain and secure the data of the project's 9 million beneficiaries. Since adopting Yumnn, UNICEF Yemen has integrated several technology solutions – from real-time monitoring tools to a mobile application for grievance collection in offline areas – to enhance Yumnn's capacities for reporting, management and risk mitigation.

In emergencies, UNICEF is using technology to enhance UNICEF's humanitarian action. When Mozambique was struck by two Level 4 cyclones in less than eight weeks in 2019, UNICEF worked with government partners to develop an information system designed to create data visualization and support real-time decision making. Less than 72 hours after the second cyclone made landfall, the government was able to use the system to release preliminary impact data and initial resettlement camps were mapped with up-to-date information about the number of displaced people.

T4D-supported approaches to programme delivery have also been a critical enabler of UNICEF's global response to the worldwide coronavirus (COVID-19) pandemic and efforts to mitigate the effects of the virus on the health and well-being of children, as well as recovery efforts. This report, drafted during the course of 2020, highlights a number of country COVID-19 response initiatives employing digital innovation and T4D approaches.

With ICTD's support, UNICEF is also exploring how frontier technologies can aid in both its humanitarian action and development programmes. For example, the organization has identified drone technology and drone-based services as a way to improve its work in global health and community resilience. In December 2018, UNICEF facilitated one of the first commercial vaccine deliveries by drone in a remote island of Vanuatu. The vaccine delivery covered almost 40 kilometres of rugged mountainous terrain from Dillon's Bay on the west side of the island to the east landing in remote Cook's Bay, where hard-to-reach children and pregnant women were vaccinated by a registered nurse.

The achievements for children described above and throughout this report were made possible by the thousands of people across UNICEF and its partner organizations who have contributed to and supported the application of T4D. Looking ahead, UNICEF will continue to invest in digital innovation and digital public goods such as those described here and enhance the organization's digital capabilities. That means continuing to standardize and scale the tools that will position T4D as a trusted programme partner; establish and expand partnerships with both the public and private sector; and build capacities for digital programming across the organization and the national partners we support.

Part 2:
About Technology for Development

The world is changing faster than ever before, and so too are the challenges facing its most vulnerable people. As conflict and displacement, disasters and climate change, urbanization and disease outbreaks grow increasingly complex and interrelated, new strategies and approaches to humanitarian response and development assistance are greatly needed.

Technology for development (T4D) and digital innovation – exploring new ways of delivering programmes with new partners and technologies with the support of information and communication technology (ICT) – is increasingly recognized as crucial to meeting the Sustainable Development Goals (SDGs) and the promise of the 2030 Agenda for Sustainable Development. This is the context in which UNICEF's Information Communication and Technology Division's T4D teams work with partners within and beyond UNICEF to achieve results for children.

Who We Are

Technology is generating important opportunities to advance results for children. The T4D function within ICTD provides advisory, implementation and quality assurance services to programmes on technology in UNICEF, and leadership on digital innovation.

As part of the global evaluation of innovation in UNICEF, in 2019, ICTD was recognized for its guiding role in enabling digital innovation. The evaluation recommended that leadership for digital innovation be housed within ICTD, while bringing together the various parts of UNICEF headquarters that are currently working on digital innovation.

Within the Innovation for Results cone, the T4D function is embedded within ICTD alongside the Office of Innovation, the Supply Division, the Office of Global Insight and Policy and the Office of Research. The T4D function works in close collaboration with national partners, and in support of national goals and sectoral priorities, the UNICEF Strategic Plan 2018–2021 and the SDGs.

ICTD recognizes that innovative digital solutions are useful only when they add value, accelerate service delivery, and expand reach and results for children; and scale is reached when the digital innovation, programming approach or solution is owned and led by a national government.

Box 1: Unpacking how T4D works

We take scalable innovations and technology solutions and deliver them, directly impacting the lives of millions of children around the globe, each year.

We enable technology and digital innovation in the field at scale, through our strong collaboration with programme teams, in-country technical advice and support to national partners, and engagement with United Nations agencies and other partners on technology and digital public goods. We serve as a unique resource, facilitator and a connector across programmes, planning and operations.

We help identify the most promising technologies and digital innovations for application across the globe, and support UNICEF programmes to adopt, adapt and scale up the approaches that are most useful, and to quickly identify those that are not.

We institutionalize and mainstream technologies and digital innovations that show promise, in support of national goals and priorities, UNICEF's Strategic Plan and the SDGs.

We support country deployment and testing of frontier technologies to make sure that solutions are designed and implemented with the best chance for scale and national ownership.

We help country offices develop and promote innovation and T4D strategies that align with the national governments' long-term development needs through dedicated strategic planning.

And we continuously build UNICEF and programme partners' capacities for T4D and innovation governance.

What We Do

ICTD believes that technology, digital innovation and digital programming are not the mandates of an individual or unit, but the collective responsibility of everyone. Realizing this vision requires a change in culture and incentives to promote innovative behaviours across the organization, we are reimagining ICT – from a back office support function to a digital programming and transformation function – and leveraging digital approaches to support programme effectiveness and accelerate results for children.

The role of T4D is not to innovate on behalf of the organization, but to serve as a **resource, facilitator and connector**. That means building T4D and digital innovation capacity among UNICEF staff and national partners; and supporting the development of guidance for country implementation of T4D and programmes that support digital innovation, based on evidence, good practices and experience.
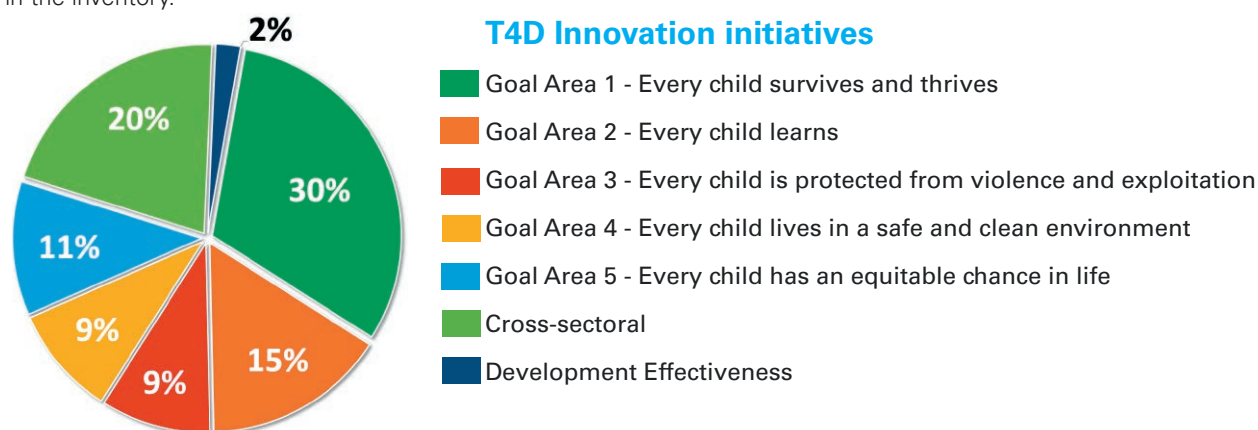
ICTD supports the coordination of T4D and digital innovation work across country and regional offices to enhance efficiencies, effectiveness, alignment, coherence and governance. That means working in close **collaboration with UNICEF programme and planning function**s – including through technical expertise, advisory services and policy guidance – to design and support evidence-based T4D and digital initiatives.

In countries, T4D staff work with programme and planning teams across UNICEF to **strengthen national systems** and deploy new digital approaches to programming. We contribute to scaling up well-established and proven products and innovative approaches and tools, including digital public goods. That includes supporting knowledge management, learning and the exchange of experiences; and enabling South-South and North-South dialogue, research and reports on challenges and best practices. In everything we do, **partnerships are essential**. ICT staff identify and support partnerships with the public, private and academic sectors to drive UNICEF programming enabled by T4D and digital innovation. We also work to leverage the comparative advantage, experience and resources of other United Nations agencies, donors and partners through joint planning, coordination, programming and experience sharing of T4D and digital initiatives to achieve results for children.

INVENT, the T4D and innovation Inventory Platform

INVENT is the T4D and Innovation Inventory Platform providing a global registry of T4D and innovation interventions supported by UNICEF and spearheaded by T4D. To date, more than 1,400 T4D and innovation initiatives have been included in the inventory.

T4D Innovation initiatives

- Goal Area 1 - Every child survives and thrives
- Goal Area 2 - Every child learns
- Goal Area 3 - Every child is protected from violence and exploitation
- Goal Area 4 - Every child lives in a safe and clean environment
- Goal Area 5 - Every child has an equitable chance in life
- Cross-sectoral
- Development Effectiveness

Of all the T4D and innovation initiatives, a third of all initiatives are currently at Proof of Concept (33 per cent) and Scaling Up (33 per cent) stages.

INVENT provides a global inventory designed to strengthen the value and impact of digital development investments, improve coordination and facilitate institutionalization and scale. INVENT supports implementers to assess the maturity of their T4D and innovation projects and gain access to global resources on current best practices in T4D and innovation. It also helps programme teams map, monitor and foster digital investments designed to meet UNICEF's strategic goals and align with good programme and planning governance processes to help country and regional offices have oversight of innovation pipelines and initiatives being scaled with and across regions. The inventory is also designed to support the development of UNICEF's Innovation Portfolio Management Approach, building on the information in the global inventory of innovation initiatives.

Why use INVENT - the Technology and Innovation Inventory Platform?

- **To foster transparency for digital development activities** by recording past, current and future initiatives;
- **To produce powerful analytics**, through a map-based summary of initiative location and activities, integrated APIs and the easy export of data;
- **To improve data quality**, through the use of a shared classification framework for organizing programme activities;
- **To enable governance and oversight**, through a project approval feature that allows programme teams to clearly communicate on the status of each intervention.

What are Digital Public Goods?

Digital Public Goods (DPGs) are digital software tools that can be adapted to different countries and contexts and used to address key development and humanitarian challenges. Mature digital public good software is free, open-source, interoperable, supported by a strong community and funded by multiple sources. DPGs have been deployed at significant scale, used across multiple countries over an extended period and have demonstrated effectiveness.

> "The scale, spread and speed of change made possible by digital technologies is unprecedented, but the current means and levels of international cooperation are unequal to the challenge."
>
> *António Guterres, United Nations Secretary-General, at the launch of the High Level Panel on Digital Cooperation*

Digital Public Goods include:

- **Software:** A software application, product or library that is free and open-source, that has proven its utility in several settings, and which provides public good to the user.
- **Services:** The electronic delivery of data or functionality. This can be an algorithm, application programming interface or modular component to a more complex programme used to manage, transmit or analyse open-source data freely.
- **Content:** A resource, toolkit or data standard that is available under an open license and that is used to improve or analyse data management or provide information and knowledge in support of digital investments.

Digital public good software takes many forms, often works in conjunction with other software and can fulfil many of the technology needs of a digital ecosystem. While digital investments are most often separated by sector, resulting in significant fragmentation and duplication of efforts, digital public goods can often be used across different programmes. For example, Primero, a digital public good initially developed for child protection case management, has been adapted to help manage cases of gender-based violence and support family tracing and reunification. Primero is now available in 30+ countries.

Box 2: Why Use Digital Public Goods?

- Digital public goods can communicate and share data with each other in a whole-of-government, strategic approach to digitization and digital development.
- The global community needs to move away from the current practice of single application solutions to a more strategic and holistic approach.
- Improving the coordination of digital investments reduces fragmentation and duplication of efforts.
- The use of digital public goods avoids 'vendor lock-in', a situation in which customers are unable to switch developers without a substantial cost.
- Source code is freely available and modifiable so there are more opportunities for collaboration across and within organizations.
- The cost of new feature development and software maintenance is shared across users and supporters of digital public goods.

> "A key value add of the regional T4D specialists is their advocacy and awareness raising function that helps our country offices make good decisions about investments in technologies. We have an obligation to support sustainable digital products. The T4D role in advocating for the use of digital public goods such as Primero, is critical."

Robert MacTavish Child Protection Specialist and Primero Project Manager, UNICEF

ICTD works to identify and strategically shape investments and opportunities for digital public goods in ways that contribute to strengthening national systems and improving service delivery. A great example is how T4D supports open-source health information management services such as District Health Information Software (DHIS2), which helps health professionals save lives by monitoring patient status, improving disease surveillance and pinpointing outbreaks.

DHIS2 is currently in use in more than 100 countries worldwide[1] and the application can be used free of charge. Platforms such as RapidPro, Open Data Kit (ODK) and OpenLMIS – all which have high interoperability with health information systems – have allowed this access to spread across the globe.

Selected examples of global digital goods

[1] DHIS2, 'DHIS2 in action', <www.dhis2.org/inaction>, accessed 11 March 2019

Strengthening National Systems Using Real-Time Technology

Strengthening national systems with the support of real-time approaches and technologies has been the focus of a two-year, 12-country interdivisional and interregional initiative supported by ICTD. The effort is driven by demand from countries and regions; and uses the open-source, real-time information platform, RapidPro, to help national governments track, course correct, deliver and accelerate results for children in line with national priorities and the UNICEF Strategic Plan.

The initiative:

- Provides interdisciplinary technical support and quality assurance to countries as they design and implement programmes;
- Captures lessons to support the efficient and effective scale up of innovative digital technology;
- Supports the identification of pathways to scaling and mainstreaming digital innovations in national programmes.

Since 2018, ICTD, with programme and planning teams, has documented and shared lessons learned, organized inter-regional webinars on sectoral real-time management approaches and supported the design, implementation and delivery of real-time monitoring systems to complement and build on national sectoral systems. According to the 2019 global evaluation of innovation in UNICEF, the initiative has demonstrated an important new way that UNICEF divisions can collaborate and encourage scale for one of the organization's key tools.

85 countries

As of 2019, **85 countries** are implementing a proven real-time information technology, at scale, with ICTD support.

"Although still new, this [real-time monitoring coordination] model represents a strong and replicable example as to how UNICEF divisions can collaborate to scale innovations."

2019 Global Evaluation of Innovation in UNICEF

Box 3: ICTD Solution Centre Support for RapidPro

Digital messaging and real-time monitoring continue to play essential roles in UNICEF's ability to deliver results for children. RapidPro – a digital messaging platform that enables programme staff to develop messaging interactions with beneficiaries – is a critical enabler of these information services. It is recognized as a digital public good within the broader digital development community.

In 2019, UNICEF used RapidPro to deliver more than 487 million messages for children, mothers, caregivers and young people in 78 countries – a 20 per cent increase over the previous year. ICTD's Field Solutions Unit has been charged with shepherding the development of the RapidPro global digital public good and strengthening UNICEF's institutional capability to leverage digital messaging for children. Highlights from 2019 include:

- Introduction of a new road mapping process reflective of a global digital public good
- Supporting health system strengthening through digital messaging
- Revising the RapidPro Online Course
- Introducing new channels and adapting to platform policy changes

> "The organizational transition of RapidPro's technical deployment support from the GIC to ICT Division has resulted in increased cohesion and collaboration across the organization…."

2019 Global Evaluation of Innovation in UNICEF

Box 4: Examples of real-time monitoring at work at the country level

- In **Colombia**, the humanitarian response to the influx of migrants from the Bolivarian Republic of Venezuela included the use of KoboToolbox to ensure accountability to affected populations.
- **The Democratic Republic of the Congo** is using Mobile Money to provide cash on hand to Ebola responders; and RapidPro to monitor education programmes in the southern part of the country and as part of the Ebola response.
- In **Eswatini**, partners are using RapidPro to gather client feedback in health facilities to inform decision making and improve the quality of services.
- **Jordan's** Hajati Cash Transfer programme is using RapidPro for both operational monitoring (troubleshooting payment issues; reporting channels) and results monitoring (surveys of beneficiaries to assess the achievements).
- In **Myanmar**, KoboToolbox is being used to conduct third-party monitoring of WASH system functionality and gather feedback from partners' WASH services.
- In the **Solomon Islands**, the Ministry of Education and Human Resources is using RapidPro for education information management; and the Ministry of Health and Medical Services is conducting a quality of care survey using Ona and Canopy.
- In **Somalia**, UNICEF and cluster partners are using ONA Data, GISIDA and Canopy Insights for nutrition. monitoring and reporting.

Part 3: Achievements

The T4D function works across UNICEF headquarters divisions and with regional and country offices to deliver results for children in line with the UNICEF Strategic Plan 2018–2021. In the first two years of the Strategic Plan and since deploying seven T4D officers at the regional level,[2] ICTD has had a powerful impact on scaling digital innovation and accelerating results for children across the organization.

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[2] These officers were first deployed in October 2017.

> "The role played by the regional technology-for-development specialists is, in general, widely recognized and appreciated and should serve as a model."
>
> *2019 Global Evaluation of Innovation in UNICEF*

The T4D function was established in 2017 to provide technical assistance and quality assurance services to digital innovation and technology initiatives in the field. Colleagues across the organization report that the function is working well and appreciated.

To date, more than 1,400 T4D and innovation initiatives have been catalogued through the global Technology for Development and Innovations inventory, which provides a view of the universe of T4D initiatives by Strategic Plan Goal Area and stage of scale.

For the first time, T4D and innovation portfolio management processes and governance have been established at the regional and country levels – in collaboration with country office management, programme and planning teams – to support alignment with programme priorities and bring coherence and structure to T4D and innovation initiatives in the field.

UNICEF has begun transforming the ICT workforce from a traditional back office function to a T4D and field-focused digital programming function. Each UNICEF regional office has supported related trainings and capacity development initiatives for ICT, programme and management staff.

The launch of key knowledge management channels and processes – including the T4D intranet website, T4D peer-to-peer support resources, regional T4D networks, a T4D webinar series for internal and external audiences, programme guidance and research – has vastly improved UNICEF's T4D and digital innovation knowledge base.

Delivering Results for Children

Goal Area 1: Every Child Survives and Thrives

Poverty, the environment, malnutrition and inaccessible or inadequate care, maternal health and nurturing practices prevent millions of children from surviving and thriving. Some 15,000 children under 5 years old still die every day from preventable causes – 7,000 of them in the first days of life. And more than 40 per cent of children under 5 may not reach their full potential.[3]

With the launch of the 2030 Agenda for Sustainable Development, the world has resolved to leave no one behind by ending extreme poverty and preventable child deaths, and calling for integrated action across sectors to tackle complex development challenges. UNICEF believes that every child has the right to grow up healthy and strong. In its Strategy for Health 2016–2030, the organization lays out two overarching goals: 1) end preventable, maternal, newborn and child deaths; and 2) promote the health and development of all children.

An increasingly connected world provides opportunities to achieve these goals. More than 7 billion people (95 per cent of the global population) live in an area that is covered by a mobile-cellular network, and nearly 41 per cent of people in developing countries have a mobile broad-band subscription.[4] Advances in technology, such as improved network speed and efficiency, cloud computing, device connectivity and data analytics are accelerating conversations on the promise of digital health.

In this context, UNICEF can harness the power of ICT to effectively support countries to ensure that every child survives and thrives. For ICTD, that means bringing together a multi-sectoral team to use technology, digital innovation and human-centred design to strengthen national health systems – including health information systems, health human resources, government service delivery – and the health system enabling environment – including government policies and funding mechanisms.

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[3] United Nations Children's Fund, 'UNICEF Strategic Plan 2018-2021: Executive Summary', UNICEF, New York, 2018.
[4] International Telecommunications Union, 'ICT Facts and Figures 2019', ITC, <www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2016.pdf>, accessed 11 March 2020.

Box 5: Human-Centred Design for Digital Health

The people designing health programmes are usually not the same people using them, which can create an empathy gap. Human-centred design is a research technology that focuses on the needs of people paired with a design methodology, allowing for innovation and implementation that take a system-wide view.

While conventional market research can be useful in making incremental improvements to existing solutions, if we look to create something new, human-centred design works to uncover latent needs that service providers and programme recipients may not even know they have.

What is it for?

Human-centred design helps address situations where health services are available but a subset of the intended population of clients are not actively seeking them. It helps us understand the underlying drivers and barriers for desired health-seeking behaviours and what we might do to improve uptake of services. The approach provides a structured process for working directly with users (i.e., caregivers) to address demand-related challenges associated with the acceptability, responsiveness and quality of services.

Who is it for?

This approach is for health professionals who are looking to investigate, understand and respond to opportunities and challenges (drivers and barriers) related to health-seeking behaviours.

How is UNICEF supporting digital health programming using human-centred design?

UNICEF has supported the World Health Organization (WHO) to develop and disseminate new global guidelines on digital health that are grounded in human-centred design. The T4D team, with UNICEF programme staff, has led trainings on these tools and human-centred design in East Asia and the Pacific, Eastern and Southern Africa, Europe and Central Asia, and the Middle East and North Africa. And across the board, T4D is supporting the implementation of technology, digital programming and innovation initiatives that draw on and promote the principles of human-centred design.

Strengthening health information management systems

Expanding immunization coverage in Pakistan

In Pakistan, vaccine-preventable diseases are a major cause of child deaths. While most of these deaths can be prevented through routine vaccination, frontline health workers face formidable challenges, including lack of timely information on children in need and how to reach them.

UNICEF is supporting the Government of Pakistan to scale up quality, high-impact and cost-effective immunization programmes and increase demand for these services. With UNICEF support, the Government is using real-time information and monitoring to facilitate two-way communication between frontline workers and communities, monitor preparations and planning of vaccination campaigns in real-time, identify coverage gaps and determine how these gaps can immediately be addressed to improve service delivery.

In October 2018, more than 37 million children received measles vaccination during a 12-day supplementary immunization campaign, thanks in part to the use of real-time monitoring powered by RapidPro, according to government reports. With UNICEF support, the Government gathered up-to-the-minute data on service availability, coverage rates and facility performance as the campaign progressed, and made immediate adjustments that allowed providers to reach even more children.

37 million children reached with measles vaccination

This collaboration, and the introduction of real-time monitoring approaches using mobile technology, has not only improved programme monitoring, it has also expanded coverage of children in hard-to-reach areas and strengthened programme delivery, overall. Based on Pakistan's experience during the measles campaign, national partners have committed to using digital innovation approaches for real-time monitoring and communication in immunization programming going forward. UNICEF has also commissioned research on the experience, and developed programming guidance, to support its use in other countries.

2020 COVID-19 Box: Risk Communication and Community Engagement in Pakistan

UNICEF engaged VIAMO's services in May 2020 for a targeted robocall and SMS campaign as part of Pakistan's response to the COVID-19 outbreak. Simple messages were developed to align with the government's guidelines on precautionary measures during COVID-19 to educate the public in hard to reach, high risk, remote and urban slum locations. UNICEF Pakistan health and VIAMO teams identified low income and vulnerable communities in 60 districts across Pakistan and robocall outreach was targeted for basic phone users, specifically women to ensure that key messages were shared amongst these communities. The outreach targets were designed based on Measles SIA 2018 and TCV Campaign 2019. The campaign was conducted between 28 April – 7 May 2020 with 6.84 million robocalls and 2 million SMS delivered to the target population in 60 locations. Robocall attempts were made to 11 million subscribers to successfully engage 6.84 million subscribers.

VIAMO's segmentation strategy utilized data on income levels, overall literacy and gender in target regions from Mobile Network Operators (MNOs) to create a content engagement strategy for robocalls and SMS-based communications. Using this data, they identified the number of SMS and robocalls that were sent out to each location based on population density and income level of the targeted population. Voice recording for robocalls was done in the voice of Special Assistant to the Prime Minister for National Health Services, Regulation & Coordination. Robocalls with short code and SMS with COVID ALERT masking were rolled out to segmented audiences. The telephone numbers of key officials were added to the list for monitoring the campaign outreach. Pakistan-specific insights show that basic phone users cannot read messages in Urdu script properly; therefore, SMS in Urdu script was only transmitted to smartphone users.

Accelerating the delivery of maternal health care in Bangladesh

Low coverage of antenatal care in Bangladesh contributes to high prevalence of chronic under-nutrition, with 36 per cent of children under 5 years suffering from stunting. A promising new approach to monitoring antenatal and postnatal care is demonstrating how the nutrition and health sectors can work together to improve service delivery and bring vital assistance to young children.

The Ministry of Health and Family Welfare's national information management system collects routine data on pregnant women and children from 13,500 community clinics throughout the country. In a first for Bangladesh, UNICEF is supporting the Ministry to bolster the existing system using real-time monitoring supported by RapidPro to enable two-way communication between the health sector and beneficiaries.

13,500
community clinics

The platform, which has been made interoperable with DHIS2, is collecting feedback from pregnant and lactating mothers – in real-time – on their experiences with vital health and nutrition services such as antenatal care, postnatal care and health and nutrition counselling. This information is helping providers assess patients' understanding and acceptance of the information and services they receive, improve their own accountability to meeting patients' needs, and adapt service delivery in response to those needs quickly and effectively.

As of December 2019, nearly 35,000 lactating women and over 13,000 pregnant women have been registered through RapidPro and have received key messages related to antenatal and postnatal care visits, as well as institutional delivery, nutrition, breastfeeding and maternal and newborn health. Initial results indicate that 89 per cent of registered pregnant women have received antenatal care and 99 per cent reported satisfaction with those services; and 91 per cent of registered lactating women received postnatal care and 97 reported that they are satisfied with that support.

Increasing access to and awareness of immunization services in Zambia

In Zambia, the routine immunization programme faces substantial challenges, including the poor quality of immunization data and inadequate human resources for data management. These challenges mean that the country is unable to measure how many children need to be immunized, how many children have actually been immunized, and how immunization services can be restructured to reach remote populations and re-engage children who have defaulted.

Using a human-centred design approach, UNICEF and the Ministry of Health are piloting mVacc, a project designed to increase immunization awareness, improve access to immunization and sustain immunization services over the longer term. The original prototype, an SMS-based platform, allows health facilities to collect immunization data and follow up with caregivers, send scheduling reminders to community health workers and share general information on vaccination with communities.

As a next step, UNICEF has integrated mVacc with the Zambian Electronic Immunization Registry, which is implemented through the OpenSRP platform. With this move, the Zambian Ministry of Health is no longer piloting multiple initiatives; it has implemented an integrated package of tools that provide end-to-end immunization service support designed to reduce dropout rates and improve monitoring of vaccine stocks, distribution and use.

Responding to the polio outbreak in the Philippines

After the Philippine's Department of Health announced a type 1 and type 2 polio outbreak in September 2019, UNICEF stepped in to support the vaccination campaign to replace its outdated information management system.

The Government had previously been using an Excel database, which made tracking targeted children extremely challenging. UNICEF replaced that system with Canopy Insights, an enterprise data management solutions platform, ONA Data and ODK Collect, an open data kit-derived free and open-source mobile app for collecting, managing and using data in resource-constrained environments. The technology platform allows for the collection of data offline, and submission of the data when internet connectivity is available, for display on a real-time data and mapping dashboard.

UNICEF and partners used Canopy Insights to monitor the progress of daily immunization coverage and supplies, analyse the information automatically and visualize the data on a daily basis to show changes over time. The data and analyses are available through a public-facing website and a secure portal for administrators and managers, facilitating the timely sharing of information among decision makers at all levels. As of end 2019, more than 6.5 million children have been vaccinated against polio through the UNICEF T4D-supported immunization campaign.

Leveraging community data for action in West and Central Africa

As the global development community transitioned from the Millennium Development Goals to the SDGs in 2015, West and Central Africa remained the region with the highest rates of maternal mortality, out-of-school children, under-five mortality and severe and acute malnutrition in the world. The region's slow progress towards the Global Goals can be attributed to challenges such as poor governance, fragility, protracted emergencies, demographic transition, weak systems and inadequate community empowerment, engagement and accountability.

Throughout the region, UNICEF is supporting the child-friendly communities approach, a community-driven,

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2020 COVID-19 Box: Enhancing digital health to support COVID-19 surveillance and respone in Burkina Faso

Burkina Faso declared a COVID-19 epidemic on 10 March 2020, which found the country in an already deteriorated security context characterized by an ongoing humanitarian crisis with increasing population displacements. By August 2020, the country had registered 1,153 cases with 54 deaths.

Due to the nature of its transmission, the COVID-19 pandemic has raised the profile and value of digital solutions in supporting all elements of health care service provision and continuity in Burkina Faso. As part of its response to the pandemic and the imposed movement restrictions, the UNICEF country office innovated and deployed a unique component to the existing national digital health initiative to support the national COVID-19 epidemic surveillance needs.

Digital health COVID-19 development in Burkina Faso aims to support COVID-19 contact tracing, detection of suspected cases in the population and searches for undeclared contact cases. The solution also aims to help decongest the COVID-19 call centre. The digital health solution currently provides community members, community health workers and health workers with knowledge on COVID-19 symptoms, provides channels to virtually notify suspected cases and a database to support response actions, and has several components. Components 1 and 2 operate exclusively by SMS for sending / receiving data. Component 3 interacts with its users via a voice server, by telephone. To promote user-friendliness and accessibility, the two components were translated into 4 local languages including Mooré, Dioula, Fulfuldé.

As of mid-2020, 409 health workers from 409 health facilities in 6 regions of Burkina Faso are now using the COVID-19 triage to monitor patients within their locality and are providing additional support to community health workers for community follow-up. By July 2020, up to 18,983 people had been followed with 511 alerts of probable COVID-19 cases reported.

As part of next steps, UNICEF Burkina Faso is finalizing the local installation of RapidPro. 2,694 ABSCs and 488 health workers in risk areas will be trained for community monitoring of COVID-19 using the digital health COVID-19 platform. UNICEF continues to lobby and advocate to partners and the government to invest more resources for national scale-up of the solution as part of an accelerated action to flatten the curve in the alarming epidemic spread.

multi-sectoral strategy that empowers local people to promote, protect, respect and fulfil the rights of children to survival, development and transformation in the context of the SDGs. A key aspect of this work involves supporting community health workers, who drive health service provision in many countries in the region, with more modern and effective health information management tools.

With UNICEF support, five countries in West and Central Africa are implementing a new digital community information system, which is designed to mainstream and strengthen community health data using information technology. Community workers can use the system to manage and monitor their own work – from household health education to the delivery of comprehensive health services – make informed decisions using up-to-date data, and obtain regular and meaningful information that will be used to plan, monitor and implement future services.

Since the launch of the child-friendly communities approach in June 2019, all five countries – Chad, the Democratic Republic of the Congo, Guinea, Liberia and Togo – are supporting the implementation of high-impact health interventions using digital community information management systems. In total, more than 1,000 women and 7,700 children under 5 years are being monitored; nearly 5,000 child visits have been conducted; and over 500 community workers are using the system to manage and monitor their work.

1,000 women
7,700 children under 5

Strengthening disease surveillance in Liberia

Frontline health workers in Liberia deliver health services in incredibly challenging environments and often lack access to the most current data. When disease outbreaks strike, providers need information that is accurate, timely and practical.

During the Ebola outbreak in 2014, the Liberia Ministry of Health introduced mHero – mobile health worker electronic response and outreach, which facilitates near real-time, two-way communication between local and central health authorities via mobile phones. The platform – which is supported by UNICEF with funding from the United States Agency for International Development – gives health workers a way to quickly deliver alerts to their managers and the Ministry of Health, enabling rapid and more effective decision making. It also gives the Ministry of Health a way to quickly communicate with health workers about emerging priorities and critical updates. These improvements have facilitated timely, life-saving interventions.

Health workers have noted that the new system has helped reduce their reporting burden and fast-track their activities. The Ministry of Health plans to progressively roll out the mHero disease surveillance model in Liberia's remaining 13 counties to improve the country's ability to prevent, direct and respond to future disease outbreaks.

Eliminating measles in Indonesia by 2020

In 2018, Indonesia started the world's largest measles-rubella vaccination campaign, targeting 35 million children aged 9 months to 15 years in 2 months on the island of Java. With the success of this campaign, the Ministry of Health launched a second, 2-month immunisation campaign in 2019, targeting an additional 35 million children on all the other Indonesian islands. A digital platform powered by RapidPro was deployed to facilitate real-time reporting, data visualization and feedback to programme managers. *About 58 million children were ultimately reached.*

A large-scale evaluation conducted by the GAVI Alliance found that the use of RapidPro as part of the measles-rubella campaign was generally effective and successful. RapidPro was accepted by most users, who reported high overall satisfaction with the experience. Users also reported that RapidPro was useful in identifying low coverage sites for further investigation and targeted corrective actions.

The evaluation itself addressed a specific gap in the peer-reviewed literature – on the impact of effective use of an digital health tool on a national immunization campaign. It also generated important lessons for UNICEF and others who are implementing such tools as they look to replicate RapidPro and other real-time monitoring technologies in other countries for immunization programming.

Preventing disease outbreaks during emergencies in Senegal

Health service delivery always benefits from strong communication between health providers and their government counterparts.

When the Ebola outbreak hit West Africa in 2014 and 2015, UNICEF supported Senegal to use mInfoSanté – an SMS-based communication system built using RapidPro – to connect Ministry of Health staff and health providers in the field. The system helped counterparts coordinate and monitor health interventions together in real-time, and respond rapidly in the event of an outbreak.
First deployed during the Ebola outbreak in West Africa in 2014 and 2015, mInfoSanté, is a user-friendly communication channel that offers monitoring and surveillance for rapid disease control and early warning in the event of an epidemic. The system allows users to communicate, report information, provide alerts and facilitate monitoring – all in real-time. mInfoSanté was developed by the Prevention Directorate of the Ministry

2020 COVID-19 Box: Quarantine Management Solution enables Health Service delivery in Malawi

As of July 2020 Malawi has registered over 1,800 confirmed cases of COVID-19. UNICEF and national partners sought ways to mitigate the impact of the pandemic and ensure the well-being of children, women and the vulnerable populations in response to the pandemic.

In 2017, the Ministry of Health (MoH) through the Quality Management Department (QMD), among other digital health solutions, established an electronic disease surveillance and response solution (eIDSR) with support from UNICEF, which was scaled to 11 districts of Malawi as of August 2019. This solution was designed as a general diseases surveillance solution for Malawi with the main user being the Public Health Institute of Malawi (PHIM).

Due to the COVID-19 pandemic, the QMD sought to ensure that the existing electronic disease surveillance solution was adapted to facilitate COVID-19 response. The QMD engaged different stakeholders to explore possible solutions to augment the eIDSR and establish a comprehensive COVID-19 solution for Malawi. The digital solutions making up the eIDSR include: District Health Information Software (DHIS2), Electronic Medical Records systems (EMRs), Lab Information Management Systems (LIMS), OpenLMIS and dashboards.

One of the gaps that the MoH wanted to address for the eIDSR solution is enhanced communication for those in quarantine or isolation with health care workers. Health care workers face many challenges during the COVID-19 emergency, one of which is getting in close contact with suspected or confirmed COVID-19 cases.

The COVID-19 quarantine management solution is a scalable SMS digital platform based on the open source platform, RapidPro that allows the MoH to correspond and interact with those in self-isolation and quarantine. The solution can be used on either a feature phone or a smartphone. It offers real-time tracking of conditions of those in isolation following policies for quarantine of individuals while adhering to infection prevention and control measures set by the MoH and WHO. The solution instantly makes information available to authorized users by being interoperable with other components (digital systems) in use as part of eIDSR in Malawi.

The solution makes it easy for people with symptoms to self-register, allowing the health care workforce to monitor and manage cases in isolation or quarantine, remotely. Also, the solution makes it easy for the administrative team to aggregate data in a more organized and systematic way. The dynamic system enables responsible personnel to easily monitor COVID-19 transactional data, by interacting with the information provided from the system. The optimized management of quarantine and isolation cases is to decrease the burden on the health care workforce as the number of cases increases exponentially. As of 1 July 2020, 486 health care providers have been registered to use the system and 3,875 people have been reached.

The digital health team under MoH's QMD department is the key partner in the design and development of this solution. As the contractor for the implementation, Good Citizen has identified Baobab Health Trust, a Malawian digital-health vendor, to execute technical tasks on the ground. UNICEF Malawi ICT and Health colleagues will provide all the necessary coordination and support in the implementation of the solution with the technical advice and support of ESAR T4D.

of Health and Information Systems Division, the Ministry of Health Information Technology Unit and the State Information Agency with UNICEF support.

Since the Ebola crisis subsided, mInfoSanté has been deployed and is being used daily in 10 of Senegal's 14 regions, with interoperability with DHIS2. Users report that the tool is strengthening the capacities of health workers to respond to health emergencies by facilitating local coordination, ambulance searches, emergency equipment requests, access to essential epidemiological information and communication with the public.

Improving living standards in Côte d'Ivoire

With UNICEF support, Côte d'Ivoire is leveraging innovations in the digital economy sector to improve the health and well-being of vulnerable people. Mobile money is a financial transaction system that gives beneficiaries the options of making deposits, withdrawals and transfers using mobile funds.

During the 2018 vaccination campaigns, more than 44,000 people received a total of US$ 4.9 million via mobile money, enabling access to basic social services and improving living standards for beneficiaries. More than 13 million children were vaccinated by community health workers who were motivated by the option of receiving payment via mobile money.[5]

44,000 people received a total of $4.9 million

By facilitating the financial inclusion of people traditionally outside the banking system, the mobile money approach has contributed to the country's economic and digital development objectives and brought Côte d'Ivoire closer to meeting the SDGs. Participants have benefited from receiving their payments in full and accessing financial technology services such as school fee payments, saving and microfinance. Mobile money has also reduced the risks associated with handling cash, reduced payment delays and improved transparency and traceability in the management of funds.

Connecting people with vital health information

Strengthening health in the first 1,000 days of life in Uganda

The 1,000 days between a woman's first day of pregnancy and her child's second birthday offer a unique window of opportunity to build a healthier child and a more prosperous

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[5] United Nations Children's Fund, 'Mobile Money Report', UNICEF Côte d'Ivoire, April 2019.

2020 COVID-19 Box: mInfoSanté provides rapid detection of suspected COVID-19 cases in Senegal

Senegal reported its first confirmed of COVID-19 case on March 2 202 and by early August 2020, 10,432 cases were reported with 214 deaths while most (39/79) health districts in the country have been affected.

Deployed during the Ebola outbreak in West Africa in 2014 and 2015, mInfoSanté has been used to provide epidemiological surveillance services to health workers. It is primarily an SMS-based communication system linking the Ministry of Health and health providers to improve the coordination and monitoring of health services and emergency interventions.

With the emergence of the COVID-19 epidemic, the tool's utility was extended to support the general public in the rapid detection of suspected COVID-19 response cases.

Early on in its response to the epidemic, Senegal adopted the mInfoSanté digital solution to assist the rapid detection of suspicious COVID-19 cases. The digital system works by generating a suspected case signal that is validated and dispatched to the District Medical Chief who then ensues an immediate investigation. Matched with existing media channels, it allows the comprehensive capture and prompt handling of all COVID-19 signals coming from the community including rumors.

The general workflow is as follows:

1. Community relays (community health workers) use Telegram, WhatsApp or SMS channels to signal suspicious cases in their neighborhood;
2. The signal is dispatched by the supervision team of MoH to relevant health district and updates the mInfoSanté dashboard;
3. The district medical chief (MCD) selects cases for investigation and assigns an investigator for follow-up;
4. The investigator traces and diagnoses the suspected cases taking samples if necessary to be sent to laboratories;
5. Laboratories test samples and update about the results for appropriate case handling.

The rationale to repurpose mInfoSanté for the early detection of COVID-19 cases was twofold:

The existence, at the national level, of a multi-purpose epidemiological surveillance tool, which is also established and supported by various partners including WHO, USAID and Measure Evaluation. Thus, the initiative leverages the momentum of different partners, who have previously contributed to the maturity of the tool, to create an early warning and detection system. That strategy is also in line with the principle of building and strengthening national systems.

The mInfoSanté platform has effectively been used since its inception as a central backbone for epidemiological surveillance by the department in charge at the Ministry of Health. There was also strong government ownership of the tool and a large proportion of the health workforce have been trained on its use and regularly report through it.

The mInfoSanté platform has already proved valuable to health care providers. The platform has helped strengthen local coordination by allowing the district medical officer to quickly inform all the head nurses with the same message. It also facilitates ambulance search and saves time to contact the nearby Head Nurse in the event of an ambulance request. This facilitates adequate preparation before the patient arrives at the health centre. The tool also records suspicious deaths and transfers information to the health post level for a quick survey. mInfoSanté also provides key information to the public by facilitating mass communication with populations according to the 2010 Centers for Disease Control guidelines and best practices. The platform is also enabling contact tracing by recording and following in real-time contact cases during a crisis or epidemic.

The initiative is present in 14 medical regions and 78 health districts and employs more than 1,500 health professionals.

The goal of the current initiative is to introduce new functionalities and integrate the tool in the national surveillance system with the DHIS2 Expanded Programme on Immunization surveillance module, the DHIS Tracker. The digital health response of Senegal to COVID-19 has been seen as a single, integrated response, not with two solutions but rather a single system of early warning and detection platform, complemented by a follow-up and monitoring system. Next steps include the setup of an extension of the call and monitoring centre, with UNICEF and World Health Organization support and seamless integration of detailed case monitoring of COVID-19 cases using the DHIS Tracker.

> *"For the first time in a health campaign, we receive the full amount due [to us]."*
>
> *Vaccinator, Bouake*

society. But in many countries, parents face significant challenges during this period. In Uganda, where child and maternal mortality rates remain high, chronic and systemic problems in health service delivery and access contribute to thousands of child deaths during the first 1,000 days of life every year.

The rising use of digital technology in Uganda – 71 per cent of Ugandans own a mobile phone – has offered an opportunity to leap-frog these hurdles, improve health service delivery and save lives. UNICEF has partnered with the Ministry of Health, Johnson & Johnson, the Elma Foundation, Health Enabled and others to develop FamilyConnect, an SMS and Unstructured Supplementary Service Data (USSD)-based health messaging tool that connects women and children through a comprehensive set of features.

FamilyConnect sends targeted, life cycle-based messages via SMS to pregnant women, new mothers, heads of households (including male partners) and caregivers with information on what they can do to keep themselves and their babies in good health during the critical first 1,000 days of life. The system also strengthens the referral chain by sending SMS follow-up reminders to community health workers, who record whether key interventions have taken place and identify which households need additional follow-up.

A nationally-owned initiative, FamilyConnect is part of the Ministry of Health's Community Health 'Suite of Tools' and was developed in collaboration with UNICEF to support the priorities of Uganda's Reproductive, Maternal, Newborn and Child Health plan. With UNICEF support, the Ministry of Health has integrated FamilyConnect with other community health interventions to identify and increase access to underserved/high burden populations with vital services.

As of December 2019, FamilyConnect has gradually scaled to 34 districts, with 11 districts added in 2019. To date, a total of 88,000 women and 20,000 village health teams have been enrolled.

Involving youth in health education in Kosovo

In Kosovo, sex education – largely considered a taboo topic – is rarely taught in schools. The absence of sex education gives rise to an array of sexual health issues, including sexually transmitted diseases and unintended pregnancies.

UNICEF Kosovo launched 'Shnet', a new and revamped comprehensive sex education application and platform designed to address misconceptions, incorrect information,

stigma and other issues related to the sexual literacy of adolescents in Kosovo. The new content is empirical, evidence-based and was developed in close cooperation with doctors, psychologists and university professors.

6,500 downloads

One of the hallmarks of the application is that it was created with young people, utilizing a by-youth-for-youth design methodology that seeks the input of end-users to create impactful interventions. The application was conceived during a UNICEF Innovation Lab UPSHIFT workshop, in collaboration with UN Women, and is carefully tailored to include information that adolescents and youth from several human-centred consultations regarded as the most critical issues affecting their physical and mental health.

To date, the Shnet team has reached 1,600 adolescents directly in schools and in their communities and there have been 6,500 downloads of the mobile application.

Providing parents in Armenia with critical information

In Armenia, only 45 per cent of children are exclusively breastfed for the first six months of their lives; only 36 per cent of children under the age of 1 are breastfed; and only 25 per cent of children under 2 years eat a diet that complies with internationally accepted standards. As a result, 9 per cent of children under 5 years are stunted and 14 per cent are overweight.

UNICEF has worked with the Armenian Ministry of Health to develop and launch Babycef (www.babycef.am) – the country's number one source of credible information about key parenting topics including nutrition, childcare, health, positive parenting and early learning.

Since its launch in June 2019, the website has been visited by nearly 18,000 users (77 per cent women and 23 per cent men) and has registered more than 84,000 page views, with an average of four page views per user. Fifteen per cent of users (2,700 users) have returned to the site.

18,000 visitors
84,000 page views

2020 COVID-19 Box: DRC Launches COVID-19 Service Centers to provide life-saving information to the public

Faced with the COVID-19 global pandemic, UNICEF Democratic Republic of the Congo (DRC) set up a service centre to provide better communication on COVID-19-related issues. The service centre includes two components: 1) National COVID-19 Call Centre and 2) National COVID-19 SMS Centre. The initiative was realized through a public-private partnership with the Ministry of Health, National Communication Commission, the Telecommunication Authority who facilitated toll-free access, four mobile network operators that were responsible for integrating the toll-free number with other networks and integration with the call centre, an SMS aggregator, Congo Call centre for the call centre operations support and UNICEF.

With a capacity of 50 call agents, the call centre is the main infrastructure around the COVID-19 response ecosystem that is designed around the single-point-of-contact (SPOC) model to seamlessly provide COVID-19-related information and medical assistance to the public across the DRC. The call centre has integrated three toll-free numbers: 101 (belonging to UNICEF), 109 and 110 (assigned to the government). Each of the toll-free numbers are integrated by all four mobile operators (Airtel, Vodacom, Orange and Africell) and mapped/routed to the call centre to provide seamless communication to all subscribers during working hours (between 08H00 – 20H00 daily). Further, the call centre has implemented Interactive Voice Response (IVR) to disseminate COVID-19-related messages to the public during call-waiting or after the call centre working hours.

The SMS Centre complements the call centre. It consists of two parts. One is the Goma-based SMS centre where five trained personnel assisted by two COVID-19 specialists support the public through uPartner to respond to questions in French and four other national languages. The other is an automated SMS bot that can be triggered by 'coronavirus', 'corona' and 'COVID', and will share verified information on the following topics: COVID-19 status, symptoms, spread mechanism, how to protect yourself and how to protect others and myths on COVID-19. In addition, the SMS centre assesses the knowledge of the public on COVID-19 through quizzes.

The service centre has stopped a large number of rumors from spreading wider among the public.

Currently, the call centre receives 12,600 calls/day, of which 6 per cent (or 600) are alerts. This is a significant number of signals, making the call centre a critical public health infrastructure. The call centre also uses Interactive Voice Response (IVR) to increase the capacity of the call centre. In the coming year, DRC plans to scale deep the initiative, improve the quality and widen service areas it covers.

Box 6: Reconnected by FamilyConnect

Married at 13, Rose AeKo's marriage went stale before she turned 20. Her husband Denis, 12 years her senior, was already looking outside the marital home after fathering a couple of children. Now 35, Rose is already a mother of five, and expecting her sixth child.

But Rose is no longer the sad woman she was a few years back. Her marriage with Denis is once again a source of bliss, which can be seen from the obvious chemistry that flows effortlessly between them. The only evidence that things ever went wrong between them is the four-year-old boy he got from another woman, whom they now both cuddle lovingly before he goes back to play with his three-and-a-half-year-old sister, Rose's daughter.

What happened between Rose and Denis, a rural couple in Kobolubulu sub-county of Kaberamaido District in Eastern Uganda, is close to a fairy tale. One day in 2018, they were in a strained marriage in which Rose had suffered anguish for some years while Denis had lost interest in her.

The next day a stranger, a village health team member, came calling at their gloomy home. He introduced them to the FamilyConnect tool. There was one complication though. The tool, which sends messages to a pregnant mother, is mobile phone-based, and the only mobile phone in the home belonged to Denis, with whom Rose was hardly talking anymore. He reluctantly grunted his approval for her messages to be sent on his phone, so she got registered. She got pregnant and when the messages came, he had to read them, and they started interpreting and discussing them together.

Gradually, or rather quickly, they started getting closer again as they discussed the balanced diet she had to eat, the antenatal visits she had to make, the general conditions around the home, how she slept and any medication she had to get. In short, they started communicating – something that had died out in their life. Asked to say exactly when their love got reignited, the couple just instinctively draw closer to each other as she smiles shyly and he holds her protectively with a rueful smile.

Rose says when the last message – which she got over a week ago – came telling her to start buying the necessities for the expected baby, Denis gave her some money with which she bought some baby clothes and a basin. She is confident that by the time her pregnancy is full-term, she will have purchased everything she and her baby will need.

As the happy couple continue to discuss the messages on their phone (Denis insists it is a family phone and not his.) their voices get lower and lower, almost to a whisper and then I notice they are quickly becoming oblivious of my presence. I quietly withdraw and leave them to savour their maternal bliss in this impoverished village, where they seem to be happier than the wealthiest couple I have ever met.

Adapted from Buwembo, Joachim, 'Reconnected by FamilyConnect: A UNICEF health innovation', UNICEF, 23 May 2019, <www.unicef.org/uganda/stories/reconnected-familyconnect>

Given the ample interest among practitioners and government counterparts to continue contributing to the website, with additional funding, the platform has the potential to significantly increase its reach and engagement.

Supporting early childhood development across the world

Bringing early childhood development resources to refugee families in Turkey

Appropriate support and stimulation in the early years of life provides dividends for a child's development and school readiness, with effects that last for a lifetime.

Global evidence shows that in high- and upper-middle income countries, 50 per cent of children who attend early childhood education (ECE) programmes are on track in literacy and numeracy skills, compared to 28 per cent of children who do not attend ECE programmes. In lower- and lower-middle income countries, the picture is bleaker: 44 per cent of children are on track if enrolled in ECE programmes, compared with 12 per cent of those who are not enrolled.[6] These early interventions are particularly crucial for refugee children, who face multiple vulnerabilities related to poverty, displacement and lack of access to health and education services.

In Turkey, there has been an increasing commitment to supporting ECE and early childhood development (ECD) for both Turkish and refugee children. In this spirit, UNICEF is working with the Ministry of National Education and

civil society actors to support bilingual summer school programmes and home-based ECE.

As part of this programme – and to facilitate parents' involvement in ECD – UNICEF and partners, with funding from the European Union and the Government of Norway, developed the First6years app, which puts key ECE information directly in the hands of parents in an interactive and fun-to-use format. The app is based on a version already in use by the Ministry of National Education for Turkish parents and was launched in Arabic to reach a wider audience in 2018. Since its launch, the app has been downloaded more than 10,000 times.

10,000 downloads

Fostering early childhood development in Thailand

While significant progress has been made in ECD in Thailand over the past decade, young children continue to face challenges related to poor nutrition, low rates of exclusive breastfeeding, lack of parental support for young children's learning and development and exposure to violent discipline.

In January 2019, to mark National Children's Day, the Ministry of Public Health and UNICEF launched the Early Moments Matter on Mobile – an innovative digital health messaging platform to help parents gain knowledge and

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6 United Nations Children's Fund, 'Percentage of children on track in literacy and numeracy skills by early childhood education programme attendance and country income group', UNICEF, <https://data.unicef.org/wp-content/uploads/infograms/10511/index.html>, accessed 11 March 2019.

> **"For the first time in a health campaign, we receive the full amount due [to us]."**
>
> *Vaccinator, Bouake*

2020 COVID-19 Box: Using digital technology to address COVID-19 misinformation in Eastern Europe and Central Asia

As COVID-19 continues to spread around the world, access to relevant and reliable information about the global pandemic is vital. To promote protective and preventive behaviours at the community and individual levels, UNICEF Regional Office for Europe and Central Asia and WHO EURO, co-launched a web-based chatbot service, called HealthBuddy, which supplies answers to the most often asked questions about COVID-19 in April 2020.

The technical solution is based on the RapidPro platform, and is powered by a conversational artificial intelligence framework with an integrated natural language processing tool, that currently supports 10 languages – English, Russian, Greek, Kazakh, Spanish, Italian, Portuguese, Macedonian, Turkish and Bulgarian – with an autodetection mechanism based on users' browser setting and an option for manual language selection. Future releases will include support for nine other languages and deployment in countries without U-Report in Europe and Central Asia.

The chatbot content relies on up-to-date, scientific and evidence-based information about COVID-19, provided by UNICEF and WHO. In addition, it will include features that capture feedback and track incidents of misinformation using multiple social media messaging channels, while allowing users to report fake news or rumors encountered in their communities. These incidents are then tracked on a dashboard, and correct information presented to the users.

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skills on ECD for their young children. Using RapidPro, Facebook Messenger and LINE, the platform provides personalized two-way communication on parenting from pregnancy through age 6 in the form of messages, alerts, video links, photos and other user-friendly media.

To date, Early Moments Matter has accumulated 57,000 Facebook followers and 32,000 Messenger subscribers, with 2 million messages sent per month.

Reaching parents in Sierra Leone on early childhood development

Early experiences shape young brains. Children's first experiences with play normally occur in the home, and how they learn to play, what they eat and how they are shown to low all contribute equally to development. Instruction at home is therefore crucial to early childhood development (ECD).

In Sierra Leone, UNICEF is using digital channels powered by RapidPro to reach parents with rich content on early childhood development. The U-Report Bot, or 'U-Bot' gives parents and caregivers practical tips and information for

integrated approaches to maximize cognitive, physical and emotional development, tailored to each distinct age group. Using the two-way communication feature, participants can also offer feedback on how UNICEF can deliver better content, what information is most important and what details they would rather not receive.

Goal Area 2: Every Child Learns

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A range of factors – including geographic location, economic circumstances, gender, disability, low-quality teaching and schools, disruption from conflicts and other shocks – prevent millions of children from learning, every day.

More than half the world's children of preschool age, 61 million children of primary school age, 60 million adolescents of lower secondary school age and 142 million adolescents of upper secondary school age lack access to learning opportunities. An estimated 130 million children have reached Grade 4 without learning basic reading and mathematics skills. And conflict has forced approximately

27 million children out of school. Girls are 2.5 times more likely to be out of school than boys in countries affected by conflict.[7]

UNICEF believes that every child has the right to an education and quality learning opportunities from early childhood to adolescence. The organization also recognizes the acute need for innovation in education, particularly to strengthen education systems so that schooling translates into strong learning outcomes. T4D is well-placed to help broker innovation in education using a human-centred design approach.

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7 United Nations Children's Fund, 'UNICEF Strategic Plan 2018-2021: Executive Summary', UNICEF, January 2018.

Box 7: UNICEF's priorities for innovation in education[9]

Place learning at the centre of the education innovation agenda, setting fit-for-purpose mechanisms to monitor and measure outcomes, especially of the most marginalized children and adolescents.

Establish partnerships with the private sector for innovation in education using a co-creation approach.

Work with governments and other critical stakeholders from an early stage of design throughout implementation.

Generate evidence through testing and evaluating innovations and their application.

Foster school and classroom-based innovations, including but not limited to ICT-enabled innovations, that empower and support teachers and pedagogical facilitators.

Adopt new approaches to personalized and adaptive learning, both inside and outside of the classroom.

Improving equitable access to learning opportunities through digital platforms

Box 8: Improving learning in hard-to-reach locations in Uganda

While access to secondary education has improved in Uganda in recent years, educational standards remain low, partly due to inadequate teaching space and materials and a shortage of teachers. Boys and girls are both affected, but girls fall considerably further behind in achievement in secondary education, particularly in science, technology, engineering and mathematics. Girls are also vulnerable to dropping out of school due to early marriage, early pregnancy and violence.

In emergency settings, both boys and girls are out of school in large numbers. In the eight refugee-hosting districts, 57 per cent of children are out of school.

UNICEF has partnered with the Government of Uganda to roll out *Kolibri,* a free and open-source digital technology platform that allows in and out-of-school students to learn at their own pace, while providing teachers and mentors with educational resources. The platform is hosted by the Uganda National ICT Authority (NITA-U) free of charge and is offered as a core service within the eGovernment portal.

With *Kolibri*, students and teachers in government schools can access content on mathematics, science, technology, arts, humanities and life skills through text, video, interactive simulations and games. The platform, which is available both online and offline for resource-constrained communities, also contains videos in sign language, ebooks for children with low vision and audio books for children with disabilities.

Pilot testing of *Kolibri* has demonstrated that continued investment in educational technology and digital learning materials in schools is a powerful approach. Teachers, students and out-of-school learners report that the platform adds value to the overall learning environment. *Kolibri* also makes computer labs more attractive by offering engaging and interesting learning opportunities; and motivates teachers to expand access to the labs, giving more students opportunities to build basic ICT skills.

"I have interacted with students who are really very happy with Kolibri. The benefits outweigh the cost. Our school recently participated in the technovation challenge and we emerged the best." –Bishop Kivenjere, Head Teacher

Combatting school exclusion in Brazil

More than 2.8 million children and adolescents are out of school in Brazil.[8] Children aged 4 to 5 and 15 to 17 are disproportionately impacted, as are girls and boys living in poverty; children who lack access to health, social welfare and protection services; black and indigenous children; children with disabilities; and children in conflict with the law.

Since 2010, UNICEF has been working with local partners and the Government of Brazil to combat school exclusion. As part of this effort, an education data portal was developed in 2014; and in 2019, UNICEF launched the Active Search for Out of School Children and Adolescents project.

The Active Search for Out of School Children and Adolescents project combines a social methodology with a free technological platform to give local authorities the data and tools they need to identify out-of-school children, understand the reasons behind the phenomenon, and ensure a data driven pathway to re-enrolment.

17,000 students
re-enrolled in the public school

To date, more than 187,000 out-of-school children have been identified across more than 3,000 municipalities – more than half of all municipalities in Brazil. By December, nearly 17,000 children and adolescents had been re-enrolled in the public school system. Local partnerships have been key to the effort. In Rio de Janeiro alone, more than 6,800 children and adolescents were re-enrolled in partnership with NGO Cidade Escola Aprendiz, and with the financial support of the Ministry of Education.

The innovative and interactive methodology has given local education actors the opportunity to take ownership of the online platform through a website and mobile application. And the system is continuously being improved – in 2020, new features such as user-friendly dashboards are allowing participants to observe project developments in real-time and refine the strategy for greater impact.

Addressing learning barriers for children in Bulgaria

In Bulgaria, barriers such as poverty, disability, social exclusion and discrimination are undermining children's access to quality education. More than 150,000 children aged 5 to 16 years are out of school, and every year, 15,000 children drop out. Even those children who are in school are not necessarily learning as they should – more than 50 per cent of 15-year-olds are functionally illiterate.

UNICEF is working with the Ministry of Education and Science and a private sector company – educational tutoring website ucha.se – to co-create and pilot test an online diagnostic screening for core subjects and tutoring resources. The experience has highlighted the power of co-creating innovative education tools with a highly motivated business partner, which has not only supported the project's success, but also its sustainability over the longer-term.

10% increase in reading scores
21% increase in mathematics scores

The diagnostic screening identifies learning gaps and generates a personalized learning programme that links to the online tutoring resources. These include engaging video lessons involving well-known public futures and track progress as the child advances. The aim is to provide a fun, self-paced way for children and adolescents to catch up with their peers.

Early results indicate that participating students have increased their aptitudes using the resource, with a 10 per cent increase in reading scores and a 21 per cent increase in mathematics scores.

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8 Government of Brazil, National Survey by Household Sample, 2015.

Enabling career opportunities for young people in India

A significant number of government education scholarships go unused in India each year because students either do not know about the opportunity or do not know how to apply.

UNICEF India-Education and the T4D team have partnered with a private sector company, idreamcareer.com, to offer their online career portal for free to government students in Grades 9 and 10. The UNICEF team is subsidizing access so that students can receive information about scholarship opportunities, and better understand and prepare for the careers of their choice.

Since the project rolled out in 2019, more than 1 million students in six states have accessed the portal. UNICEF is also working with the idreamcareer.com management team to offer free content to other young people via U-Report and develop the model for free access by young people who are not in the formal education system to take advantage of the opportunity. Working with a private sector vendor to host the platform is proving to be a strong model for bringing the portal to scale sustainably.

Accessed by 1 million students in 6 states

2020 COVID-19 Box: Escola ba Uma "Distance Learning for All" and the Learning Passport in Timor-Leste

When school closures forced by the coronavirus pandemic in Timor-Leste disrupted learning for 400,000 students, the Timorese Ministry of Education called on UNICEF to help find a way to keep students learning.

Setting up distance learning to support all children, especially those in remote areas, was a challenge due to limited access to technology. Internet in Timor-Leste is predominantly available in urban cities and while almost all families in Timor-Leste have a mobile phone, less than half have a TV, and only a quarter of people have access to radio. Therefore, UNICEF had to find a way to maximize the reach of distance learning programmes using different modalities.

In March 2020, with support from the Global Partnership for Education, the Timor-Leste Ministry of Education and UNICEF launched the distance learning program Eskola Ba Uma, which translates as 'School Goes Home' in the national language of Tetun.

Eskola Ba Uma relies on an open, distance and flexible learning approach through different technologies and provides local and contextualized learning materials across TV, radio, online, mobile phones and print, aiming to ensure all children can access education resources, no matter their circumstances.

The online part of the program, the Learning Passport, was designed with Microsoft and University of Cambridge and provides children remote access to their national school curriculum with child-friendly textbooks, storybooks, songs and videos. It also keeps the children engaged via interactive quizzes while tracking their progress. As part of an integrated approach. In addition, 28-minute television programmes have been aired, and daily radio programmes broadcast through 22 community radio stations. Teachers are also receiving training on how to support learning outside the classroom and on teaching through the online platforms.

UNICEF also launched an app version of the platform to allow students to download books and resources in advance while they are in internet range, so they can continue to study once at home, even if their community does not have regular access to the internet.

The main partners of this initiative include: the Timorese Ministry of Education, Global Partnership for Education, a local Telecom Company, the University of Cambridge and Microsoft.

This initiative has made continued learning and education possible for Timorese children not only in response to COVID-19 but during recovery and beyond. It is expected to help pave the way for more accessible education systems for remote communities in the future.

Identifying opportunities and challenges for digital learning in sub-Saharan Africa

The technological revolution has enabled fast-paced change around the world. Technology has connected remote populations, improved communication, and facilitated widespread knowledge sharing. Increasingly, ICT has been introduced and applied in the education space – for both the learner and the teacher, in classrooms and schools, and across the world – to improve the efficiencies and effectiveness of programmes and operations.

Globally, and especially in sub-Saharan Africa, UNICEF's primary experience using technological innovations in education is for real-time monitoring – administrative tasks that track quality education indicators via mobile phones. As technology becomes more flexible and cheaper to

deploy, opportunities to leverage technological tools and platforms for learning are also growing. However, despite the many opportunities that technological innovations can bring for learning, UNICEF's Eastern and Southern Africa and West and Central Africa regional offices lack clear guidelines on how and where ICTs can add the greatest value for children in learning outcomes.

In this context, the UNICEF regional offices in sub-Saharan Africa commissioned the Innovation Unit, along with the Aga Khan Education Services and the Aga Khan Foundation to undertake research to inform the development of a UNICEF position on ICT for learning. The resulting paper, 'Raising Learning Outcomes: The opportunities and challenges of ICT for learning', identified three urgent priorities:

1. Build knowledge of and confidence about ICT for learning across the region;
2. Enable strategic and practical action; and
3. Facilitate coordination, coherence and integration.

In the project's second phase, partners have created tools and resources useful for national and sub-national policy and decision makers, school leaders, educators and other organizations and stakeholders invested in the education ecosystem to help them act on the research findings.

Increasing access to learning for Francophone children in Mauritania

While Mauritania has a modern bilingual education system, the quality of bilingual instruction varies greatly. In 2014, a Grade 3 student had only mastered 23 per cent of the Arabic programme and 13 per cent of the French programme. Although expected to teach in both Arabic and French, a significant percentage of teachers are considered non-functional in French. The education system also struggles with inadequate teacher training to cope with the educational needs of Malian refugee children.

UNICEF has partnered with the Akelius Foundation to facilitate the acquisition of French language by marginalized children in Mauritania – including Malian refugee children – through the provision of access to a digital French language platform. The platform includes a blended learning approach that supports French teaching in the classroom, as well as self-learning for children who lack access to schools or language classes. To date, the project has benefited more than 300 children and youth and 26 teachers.

Scaling data monitoring, planning and management for education in Sierra Leone

A key bottleneck for the education system in Sierra Leone is the lack of a monitoring system. The country has struggled to gather, process, store and disseminate routine data on students and their educators, making it difficult to track progress against key performance indicators, prioritize resources for those schools that are most in need and take timely corrective actions.

In 2015, UNICEF Sierra Leone and its implementing partners used EduTrac – an SMS-based platform powered by RapidPro to monitor Ebola hygiene supplies in schools and help schools reopen. UNICEF secured funding from the Global Partnership for Education to extend the EduTrac initiative to improve data collection, management and planning for the education sector more broadly and establish a governmentled monitoring system that builds on EduTrac.

Connecting children with disabilities to learning opportunities

Making textbooks accessible, affordable and available for all

Children with disabilities remain one of the most marginalized and excluded groups, globally, and for these children, gaining access to quality education can be challenging. By adding specific features and following universal design for learning principles, textbooks can be made accessible for students who are visually or hearing impaired, and have intellectual, developmental or learning disabilities.

UNICEF and partners are driving an innovative solution called Accessible Digital Textbooks for All, to improve access to education by making textbooks available, affordable and accessible for children with disabilities in all contexts.

The initiative brings writers, publishers, teachers, organizations of persons with disabilities, technologists and ministry of education representatives together to develop the guidelines needed to produce textbooks in accessible digital formats. Participants have jointly set standards for features such as narration, sign language, interactivity and the audio description of images.

In 2019, ICTD created the information technology solution that the digital textbook is based on. The solution uses frontier technology that allows – for the first time – the generation of textbooks in a digital format that is fully accessible to children with different abilities. Children can view sign language and text simultaneously, highlight words and use different fonts, and access an audio component – all in one platform. ICTD also helped define the needs and text requirements, build the books using the best design approaches, identify potential technology partners (e.g., Microsoft and Google) and create a road map for scaling the solution.

The textbooks were piloted in six countries in Africa and Latin America in 2019, with successful results, and additional schools have requested the technology worldwide.

All children, including those with severe communication challenges, have the right to learn. In Europe and Central Asia, Augmentative and Alternative Communication (AAC) is being made available to young children with complex communication needs to help them develop language skills and participate in education and social life, right from the early years.

The UNICEF country offices in Croatia, Montenegro and Serbia – with the UNICEF Europe and Central Asia Regional Office, the Office of Innovation and the T4D team – are leading an initiative to advance the availability and use of affordable AAC in preferred languages and to strengthen the capacities of professionals to use AAC to support the education and social inclusion of young children. Early intervention professionals (e.g., preschool teachers, speech and language therapists, psychologists, special educators, etc.) are being trained to identify children's delays in a timely manner and introduce AAC solutions as part of early interventions.

Key achievements to date:

- Open-source pictographic symbol sets used for communication have been customized for the three countries and are available for users and public and private sector developers.
- A web platform and online course on pictographic symbols is allowing countries to customize the symbols to their unique preferences.
- An open source online training package is giving early intervention professionals the skills to support children with assistive technology in the domain of communication.
- The training package is available in three languages, including English, to serve as a global good and support scale up.

Box 9: "Cboard" - Giving every child a voice with ACC technology

During emergencies, access to specialized care and facilities is disrupted negatively impacting persons living with disabilities. The global COVID-19 pandemic is no exception. It is estimated that there are over 12,000 children aged 0–6 years in Croatia, Montenegro, and Serbia with complex communication needs.

To help promote interaction, overcome speech impairments, develop language, and steer these children towards an education and active social life from their early years, UNICEF Eastern Europe and Central Asia (ECAR) is piloting an initiative to provide affordable Assistive Technology for Augmentative and Alternative Communication (AAC) to children of the region. It is estimated that about 840,000 children would potentially benefit from this initiative.

Developed by Venture Fund Graduate "Cireha", Cboard is an open source, AAC, tablet-based mobile app that accesses over 20,000 symbols from the global symbols database. Cboard is offline-compatible, and in low-tech settings, the pictographic symbol sets can also be printed to support paper-based communication with children.

Since November 2019, the Cboard pilot has involved 125 children, aged 3–12, and over 70 professionals including pre-school teachers, speech and language therapists, psychologists, occupational therapists and special educators.

Parents and professionals reported a positive response in children with communication needs that have effectively integrated Cboard into their daily lives both at home and school. Professionals have reported that the children responded particularly well to the text-to-speech functionality whereby each pictogram pressed speaks the label out loud in the local language. This had led to reports of improved confidence and vocalization in children who are primarily non-verbal.

Initial results point to a promising trend showing progress on adaptability, competence and self-esteem across the PIADS (Psychosocial Impact of Assistive Devices) scale. The pilot is continuing during the COVID-19 crisis in 2020 as the Cboard communicator is being used at home by children who are supported by parents. Face-to-face support provided by professionals to parents and children has been replaced by digital and remote means of communication and support through phone, WhatsApp and Viber.

Bringing solutions to Ukrainian children with dyslexia

Dyslexia - which affects between 10 and 20 per cent of people in Ukraine – is a learning disorder that makes it difficult to process and interpret written symbols. Children with dyslexia have difficulty learning to read and write and can face stigma and discrimination in educational environments.

UNICEF is supporting the Government of Ukraine to make education more inclusive and responsive to the diverse needs of children, including those with disabilities. In the summer of 2019, working closely with the Ministry of Education and implementing partners, UNICEF created the first Cyrillic type font for people with dyslexia, "Inclusion_ UKR". The product consists of letters, numbers and punctuation marks that can be used in language learning or in general literature.

To date, 74 children with dyslexia have been reached through pilot testing with positive results. UNICEF is also finalizing an agreement with the Kyiv City Metro system to help make subways more accessible to millions of passengers by doing what?

To build the capacities of educational professionals to work with children with disabilities, UNICEF also developed an online training simulation that adapts and operationalizes the WHO International Classification of Functioning, Disability and Health for education purposes. The tool provides hands-on, concrete recommendations for elementary school professionals on how to work with a diverse contingent of children in the classroom. The training is in the final stages of testing and is expected to become a certified training tool for the Ministry of Education.

Improving learning in emergencies

Getting learners in the Philippines back to school

During the 2019 conflict in the Bangsamoro region, more than 77,000 families were displaced in the city of Marawi. The violence uprooted children and their families and destroyed Marawi's education facilities, leaving children out of school, in temporary learning spaces or attending over-crowded host schools in neighbouring provinces.

To address this, the Department of Education developed the Back to School, Stay in School initiative, a framework for providing education in post-conflict settings. But education authorities lacked the data they needed to inform the initiative's design and implementation.
Working in partnership with the Department of Education, UNICEF developed the Learning Tracking System to collect data on affected learners so that appropriate, timely and adequate education services could be delivered to displaced children.

The Learning Tracking System draws on Ona Data, a mobile data collection platform used to conduct field surveys that gather data on learners (e.g., status of school

attendance, age, last grade level attended, etc.) and their caregivers (e.g., name, location, contact information, etc.). Department of Education teachers were trained to use their smart phones to collect vital information through the system in host villages and displacement settlements. By January 2019, UNICEF had used the system to track nearly 121,000 affected learners and 63,000 affected households.

121,000 affected learners tracked
63,000 affected households tracked

Education authorities consider the Learner Tracking System an innovative approach to tracking unserved learners who are affected by conflict. The system has been integrated into a new education initiative to develop a data-driven approach to mobilizing funds for education services in marginalized areas.

Based on its contributions, UNICEF has been invited to support wider strategic education sector planning towards the development of the Bangsamoro Autonomous Region of Muslim Mindanao Education Reform and Development Plan 2035.

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Goal Area 3: Every child is protected from violence and exploitation

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Every child has the right to be protected from violence, exploitation and abuse. And yet, social norms, cultural practices, intra-state conflict, displacement and other harmful actions undermine children's safety and well-being in every country.

Up to 1 billion girls and boys experience some form of violence or harmful practice, including sexual violence. Almost 750 million girls and women were married as children, and at least 200 million women and girls were subjected to female genital mutilation/cutting.[9] Gender-based violence continues to be one of the most pervasive violations of human rights in the world. And humanitarian crises make children even more vulnerable to harm.

Over the past decade, there has been growing awareness that strengthening civil registration and vital statistics systems – including birth registration – is an essential aspect of child protection. This is fuelled not only by

awareness of the important legal and socio-economic benefits of having documentary evidence of one's identity and family relationships, but also of the need for more reliable and timely data to track progress towards the SDGs. The value of this data cuts across programme areas, including health, nutrition, early childhood development, education, social protection and humanitarian response.

The UNICEF Strategic Plan emphasizes the importance of strengthening information management systems for child protection, and T4D and digital innovation have a primary role to play in that effort. Information management systems are integral to protection and birth registration programmes, connecting monitoring of violations and functional identity with access to critical services. T4D staff are therefore working closely with the Programme Division – Child Protection and inter-agency partners to address the need for innovative solutions to information management in child protection.

9 'UNICEF Strategic Plan 2018-2021: Executive Summary'.

Measuring the impact of birth registration initiatives in West and Central Africa

West and Central Africa has the lowest birth registration rates in the world, with only 45 per cent of children under 5 years registered. Registration of children under 1 is even lower, standing at 43 per cent, with an estimated 10 million children aged 0–11 months not registered.[10]

UNICEF carries out birth registration initiatives across the region. To measure the results and impact of those interventions, and to generate real-time data for countries to use in planning and monitoring civil registration service performance, UNICEF has supported the development of a routine data collection system powered by RapidPro that has increased the availability of real-time data on birth registration.

The system tracks the number of children registered on a monthly basis; the number of children born and registered during the calendar year; the number of children registered within the legal delay; and the number of children born and given a birth certificate in the calendar year. The data is transmitted on a monthly basis from primary civil registration centres to the central government, and automatically compiled and displayed in a dashboard allowing for disaggregation of data by region/centre/indicator. The dashboard has considerably increased the availability and analysis of real-time data on birth registration.

In 2019, birth registration using mobile technology and real-time monitoring approaches was tested in selected regions of Benin, Cameroon, Guinea-Bissau, Mali and Senegal. Early evidence indicates that the initiative is helping to realize the rights of thousands of children to a name and legal identity.

In Senegal, by 2019, the system had facilitated the tracking of registration and certification of 34,000 children. In 2020, UNICEF and partners will continue to scale the initiative in West Africa, including in Côte d'Ivoire, Guinea and Liberia.

Mapping children without family care in Indonesia

Millions of children around the world are growing up without one or both of their parents. Many more are at risk of separation, due to the impacts of poverty, disability and sickness, or crises such as natural disasters and armed conflict.

Children in out-of-family care find themselves at higher risk of abuse and exploitation, and experience poor educational and health outcomes due to inadequate access to essential health and social services. Many children are

placed unnecessarily and for too long in institutions where they receive less of the stimulation and individual attention needed to grow to their full potential.
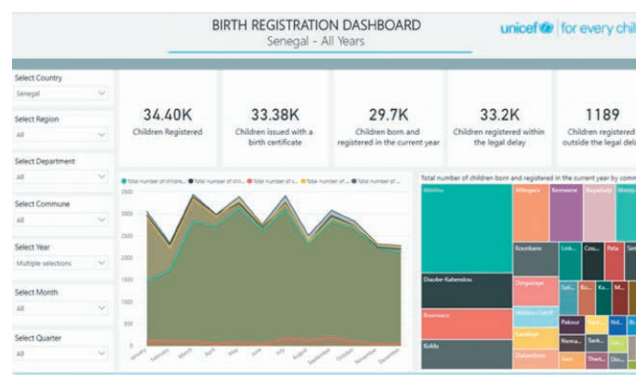
Asia has the highest number of orphans globally, contributing 61 million to the global estimate of 140 million children. Indonesia is caring for an estimated half a million out-of-family children in 8,000 institutions.[11] Despite high levels of inter-ministerial engagement, data on the numbers of residential care institutions and the profiles of children who reside there are lacking. There is also a lack of reliable data on children living on the streets who are subject to additional health, social and safety concerns.

UNICEF partnered with the Ministry of Social Affairs to design and implement a mobile platform combining ONA Data and RapidPro for the systematic mapping of all vulnerable children living in out-of-family care, including children living on the street. The activity was aligned with a national measles-rubella campaign to ensure that vulnerable children not normally captured by official records and social services could be identified and benefit from immunization.

The real-time mapping exercise identified more than 44,000 children living in out-of-family care and nearly 1,000 social welfare institutions, representing a 52 per cent increase over previous estimates. The exercise also helped to connect vulnerable children to a critical public health intervention. Coverage of the 2018 national measles-rubella campaign increased from 66 per cent to 92 per cent using data from the mapping exercise. Social workers reported that the exercise was low-cost and easy to conduct using the mobile tools, and based on this experience, the Ministry of Social Affairs plans to expand the approach nationally.[12]

44,000 children in out-of-family care identified
1,000 social welfare institutions identified
92% measles vaccination coverage

10 Country data from multiple indicator cluster surveys and demographic and health surveys.
11 Government of Indonesia, Ministry of Social Affairs, 2013.
12 United Nations Children's Fund, 'Real-Time Mapping and Essential Family Service Delivery for Out-of Family Care Children in Indonesia' (draft)

Improving child welfare in Indonesia

In Indonesia, tracking and managing child welfare services using paper has been extremely challenging, with serious inefficiencies and duplication of efforts. To address this, UNICEF Indonesia is working with the Ministry of Social Affairs to increase the coordination and quality of child welfare information in one of the largest implementations of Primero to date.

Primero is a web-based platform developed to enhance how humanitarian and development professionals monitor incidents and manage cases related to child protection. The software application enables users to securely collect, store, manage and share data through a digitized process, while enabling interoperability and information exchange between existing child protection information management systems. Primero's standardized approach and information exchange for the management of child services strengthens efficiencies, improves response time and ensures adherence to confidentiality and ethical standards.

In May 2018, UNICEF Indonesia – Child Protection, with the T4D team and partners, launched Primero in five pilot sites in Indonesia to increase efficiencies in service provision for 5,000 high-risk children and 55,000 medium-risk children. Now in the deployment stage, UNICEF has secured government buy-in, including financing from the Ministry of Social Affairs to take over Primero and scale the effort to the national level. By the end of 2019, 143 social workers had been registered and 350 cases had been managed across eight pilot sites.

118 tracing requests registered
49 children reunified with families

Following the earthquake and tsunami that struck the Indonesian island, Sulawesi, in 2018, the Ministry of Social Affairs requested that UNICEF deploy Primero to support reunification and tracing for children separated from their families during the disaster. In the days after the tsunami, 56 social workers from the Ministry and local organizations were trained to enter data on Primero's Indonesian-language web and mobile versions, including the missing child's name, gender, date of birth, address, the parents' basic information and a short chronology of how they were separated. In 2019, 118 tracing requests had been registered and 49 children had been reunified with families through the platform.

Strengthening case management in West and Central Africa

Child protection remains a major concern in the West and Central Africa region. More than 8 in every 10 children aged 1–14 years are victims of violent discipline. And girls are particularly affected: 40 per cent of girls are married or in common law unions before the age of 18, and 22 per cent of girls aged 15 to 19 have undergone female genital mutilation. The low birth registration rate – fewer than half of children under 1 year are registered at birth – also poses significant risks to children's full enjoyments of their rights.

117 case workers engaged

These challenges are compounded by the large-scale humanitarian crises affecting the region. More than 6 million children were either refugees or internally displaced at the beginning of 2019, and some 2.6 million children were international migrants. These crises require dedicated case management capacity to support children and families, as well as innovative information management.

In West and Central Africa, UNICEF supports governments to strengthen or implement robust case management systems to link frontline actors working in communities with social workers. Since 2015, UNICEF has been investing in a digital information management system through the application of Primero. The Primero Child Protection Information Management System facilitates effective individual case management for vulnerable children and is designed to promote best practices and accountability, and help child protection programmes implement quality care in emergencies and development contexts.

By 2019, UNICEF had initiated the process of deploying Primero in 15 countries in the West and Central African region. Of these countries, Sierra Leone and Burkina Faso have finalized the process and are in the implementation and roll-out phase, while Niger and Nigeria are preparing to launch the online version.

In Sierra Leone, Primero was launched during the Ebola response period to support the case management system, which was overwhelmed by the large volume of orphaned children. The country has since supported one of the largest implementations of Primero globally. The platform is now fully integrated into government systems and supporting resilience and sustainability, with more than 17,000 cases registered, 117 case workers engaged and 23 agencies using Primero.

Reaching adolescent girls in Iraq and Lebanon with sexual and reproductive health information

Adolescent girls are disproportionately affected by humanitarian crises. They are excluded, marginalized and at heightened risk of gender-based violence and negative health outcomes. And their access to sexual and reproductive health services is often limited. These realities can increase their exposure to sexual violence and other sexual and reproductive health challenges.

In recent years, the humanitarian community has increasingly focused on the unique needs and vulnerabilities of adolescent girls in emergency settings. In Lebanon and Iraq, safe spaces for women and girls have been established to provide sexual and reproductive health information, connect women and girls with services and provide them with opportunities for skill-building, peer connection and support.

Yet access to these spaces can be challenging for adolescent girls due to security concerns, domestic responsibilities and gender norms. Girls who do attend these spaces often struggle to discuss sensitive topics related to sexual and reproductive health. Expanding access to ICT can provide new opportunities for learning and education, especially in remote regions and during humanitarian crises, and particularly for marginalized adolescent girls.

In response to the need for a safe, trusted information platform, UNICEF and partners – with funding from the Bureau of Population, Refugees and Migration – have designed a virtual safe space to provide gender-sensitive health and life skills information to women and girls in Iraq and Lebanon. Participants are able to access the platform either in a physical safe space or a virtual safe space.

Box 10: Primeo X

ICTD is working with the Child Protection team to scale Primero, an open-source software platform available in 63 countries that helps social services, humanitarian and development workers manage protection-related data. Primero tools facilitate case management, incident monitoring and family tracing, and reunification.

Primero v2 is under development, and will be accompanied by a new governance and business model, known as Primero X. Primero X is a Software as a Service offering that will support the scale up of Primero and turn it into a digital public good to help governments and partners support the achievement of the SDGs.

This sustainability model will help UNICEF better plan future deployments and share costs over multiple years. Capable of being installed on UNICEF or partner servers, Primero X will allow organizations to manage their system in the cloud or using institutional infrastructure, improving ownership, operational efficiencies, and rendering the platform more user-friendly. The minimum viable product of Primero v2 is now available, and the first pilot will be undertaken in Ghana in 2020.

Reporting on violence against children in Eastern and Southern Africa

One of the key components of a strong child protection system is a mechanism that both adults and children can use to report incidents or risks of abuse, violence or exploitation against a child.

In 2019, UNICEF deployed a tool-free child help line – a telephone-based reporting channel for child abuse – in Kenya, Tanzania and Uganda. The system was successfully handed over to national partners with support from the respective government ministries. All three countries are successfully using the system to receive phone calls, log cases and make referrals for counselling. In 2019, the child help line in Kenya received and serviced nearly 8,000 calls.

Keeping children safe online

In East Asia and the Pacific, children are among the most active and influential users of the internet. The internet provides significant opportunities for children to access information and entertainment and to learn, communicate and engage with others. However, the online environment also poses unique threats to their safety and well-being, including sexual abuse and exploitation, bullying and infringements of privacy. The ubiquitous presence of mobile devices has made online access for children less supervised, often blurring the boundaries between a child's online and offline worlds.

Across the region, UNICEF is prioritizing a rights-based approach to child online protection, seeking to protect, promote and respect all children's rights online, especially the rights to privacy, access to information, freedom of expression and protection from violence. UNICEF works closely with the Global Partnership to End Violence Against Children to implement the WePROTECT Model National Response framework. Key priorities include strengthening systems and capacities; improving governance and policy; fostering behaviour change; enhancing data, evidence and knowledge; and fostering partnerships and alliances.

2020 COVID-19 Box: Telephone helpline provides pyschosocial support to children and families in Tunisia

In collaboration with civil society, private sector and with the technical and financial support of UNICEF, Tunisia's Ministry of Women, Children, Families and Seniors (MFFES) established a telephone help-line to provide psychological support to families and children during the general confinement decreed during the height of the COVID-19 pandemic, characterized by an increase in domestic violence (7 times more than before) as well as violence against children.

This service – developed in partnership with a local NGO and the private sector, including VOCALCOM, TRICOM and the Société Tunisienne de Recherche et de Thérapie Familiale et du Couple – is managed by a group of 17 qualified psychologists and a child psychiatrist, and is operational 7 days a week, from 8:00 am until midnight. This innovative solution includes a multi-channel platform to host and track incoming calls as well as collect data and generate reports in real-time.

This service offers counseling to each caller – including children and adolescents – to alleviate fears and anxieties that have been further heightened due to the pandemic.

Between 6 April and 6 July 2020, this service, promoted through radio and television advertisements, has served 4,676 individuals and families, including 1,079 children. Almost 500 children were referred to a child protection representative and 39 children to a child psychiatrist. Some 930 people received psychological assistance, including 239 children. The majority of cases reported were related to physical violence.

Given the significant impact and positive outcome of this service on the population during an emergency situation and at the request of the MFFES, UNICEF will sustain the helpline beyond the COVID-19 crisis to provide free psychological counseling and targeted support to families with difficult situations in order to contribute to the protection of children and their rights.

Goal Area 4: Every child lives in a safe and clean environment

Every child has a right to live in an environment that is conducive to his or her growth and safety. Yet, climate change, weak local and national governance, unplanned urbanization and insufficient awareness of the dangers posed by environmental risks – including inadequate water and sanitation systems – expose millions of children to potential harm.

Around the world today, an estimated 2.4 billion people – women, men, girls and boys – still lack access to improved sanitation. More than 660 million lack access to improved drinking water sources. Nearly 160 million children live in high or extremely high drought severity zones, while around 300 million children live in areas with toxic levels of air pollution.[13]

UNICEF has a long history of pioneering T4D and digital innovation in the WASH sector and using its capacity, field presence and global reach to support national systems strengthening using digital technologies, at scale.

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[13] 'UNICEF Strategic Plan 2018-2021: Executive Summary'.

Reaching the hardest to reach with rural WASH services in Zimbabwe

In rural Zimbabwe, the Government, UNICEF and partners are working to improve equitable access to safe drinking water, sanitation and hygiene services. Towards this end, the Government has invested in the Rural WASH Information Management system (RWIMS) to improve data reliability, equity analysis and the use of technology in emergency preparedness and response. However, the system has struggled with several challenges, including lack of consistent communication between key informants and enumerators and the absence of two-way engagement with communities.

To address these shortcomings, UNICEF supported the Government to integrate community-informed, real-time monitoring and reporting on the status of WASH infrastructure, using RapidPro, into the existing national Rural Water and Sanitation system. Communities are now able to report changes in WASH infrastructure functionality via SMS directly to government extension workers, improving the time it takes to make corrective improvements and deliver life-saving services. Extension workers no longer have to physically visit a rural community to register WASH issues; repair needs are immediately transmitted by community informants to the Government via mobile phone and reflected in the national RWIMS database, which is accessible to all stakeholders.

1.8 million
reached through real-time monitoring WASH services

As part of the early pilot in July 2018, a message was sent to 53,000 village informants for updates on the status of WASH infrastructure, including the functionality of water points. The response rate was over 70 per cent. Repair requests were immediately issued for the 68 water points reported as non-functional. Within two weeks, 46 per cent were restored to full functionality, 10 per cent were restored to partial functionality and 12 per cent were confirmed as collapsed. Communities reported that with the use of real-time technologies, access to life-saving water and sanitation services has rapidly improved.[14]

As of December 2019, 1.8 million children have been reached via community real-time feedback on WASH service functionality and delivery through the use of mobile open-source technology. After reviewing the pilot results, the Government has decided to bring real-time monitoring using RapidPro to scale. A case study on the use of real-time monitoring approaches based on Zimbabwe's experience – and guidance on the design and delivery of real-time monitoring approaches in the WASH sector – has been commissioned by UNICEF for delivery in 2020.

> "Fuel is hard to come by in this current economic climate. Now our staff [government extension workers] do not need to travel. It's easy for them now. They pick up the phone, call the [village pump mechanic] and ask why has this water borehole been broken down for two days?"
>
> *Mr. Malandu, Chairman of the Insiza Provincial Water and Sanitation Sub-Committee*

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14 United Nations Children's Fund, 'Zimbabwe – Reaching the Hardest to Reach with Rural WASH Services Using Mobile Tech', UNICEF Zimbabwe.

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Supporting communities in India to become open defecation free

The Government of India launched the Swachh Bharat Mission (Clean India Mission) in October 2014 with a goal of achieving a clean India by October 2019.

Initially, project monitoring only covered the number of toilets constructed, with little information generated on the quality of service delivery. As a result, some households received toilets that they were unable to use, jeopardizing the achievement and sustainability of open defecation free outcomes.

In 2018, UNICEF partnered with the Government to strengthen national capacity to monitor the delivery of WASH services using RapidPro. The evidence gathered through RapidPro is being used to improve social accountability, inform the design of future initiatives and scale up WASH innovations across the country. The feedback received from rural communities will be used to build capacities and raise awareness on sanitation for grassroots motivators, local government counterparts and sanitation users.

146,000 adults reached
97,000 children reached
5.9 million indirect beneficiaries

To date, the initiative has directly benefited nearly 146,000 adults and over 97,000 children, and indirectly benefited the 5.9 million people residing in the four pilot districts.

Co-creating digital solutions with adolescent girls in Mongolia and Indonesia

Globally, outdated yet prevalent taboos still surround menstruation. Millions of girls are shamed and penalized for having periods, They are given little information about reproductive health and are therefore prevented from managing periods with normalcy and dignity. This lack of information impacts girls' confidence, health and well-being.

The digital age has opened up new opportunities. Millions of girls are now online and searching for available health and menstruation information on the internet. This increase in connectivity is helping break misconceptions around menstruation and facilitate the development of empowering digital solutions for period information and tracking – by girls and for girls.

UNICEF developed Oky, a mobile phone period tracker app to help all girls manage their own periods with dignity and confidence, while making informed decisions about their reproductive health.

The initiative was developed through extensive co-ideation workshops and sessions with girls and their close circles, including parents and community members, to ensure that girls' needs, ideas and experiences were at the heart of the period tracker app design and development. The human-centred design insights were translated into technology and user experience requirements for software development and content creation, and the process was documented to support deployment into new markets. The application launched in the fourth quarter of 2019 in Mongolia and Indonesia and will be scaled in 2020. Thus far, the app has been downloaded more than 10,000 times.

10,000 downloads

2020 COVID-19 BOX: Predictive water shortage mapping in Myanmar

In the midst of the current COVID-19 global pandemic, it is vital that people have adequate water; not only access to a supply of clean drinking water, but also sufficient water flow to enable proper hand-washing with soap. For people in the camps in the Rakhine State in Myanmar, accessing water is difficult. They rely on rainwater harvesting ponds, but because of the limited capacity of these ponds, the dry season and pressure from the high camp population, the ponds have almost dried up. Groundwater sources are prohibitively expensive to access, due to the geology of the area. Currently UNICEF has to provide water by boat and support remote pumping annually as part of the humanitarian response in locations where more sustainable infrastructure cannot be implemented.

An existing app, with data overlaid using Google Earth showing real-time presence of surface water was updated by UNICEF staff to help compare the water situation between April 2019 and April 2020 in an effort to predict the economic burden of water shortage compounded by COVID-19. The main partners of this initiative include: Solidarities International, Office of US Foreign Disaster Assistance, The Government of Japan and the United Nations Office for the Coordination of Humanitarian Affairs Central Emergency Response Fund.

The solution helped to graphically illustrate to partners the extent of water shortages and drying ponds being significantly more severe in 2020 compared to 2019. It underscored the urgency of ensuring alternative water sources were in place and the need to secure additional water sources and transportation supplies. The results generated by the data analysis highlighted the need for longer term solutions in humanitarian situations to support more sustainable infrastructure. This solution is an example of how existing T4D tools can be adapted and scaled to meet COVID-19 response and recovery needs.

Monitoring Progress Towards SDG6 in Fiji

The Government of Fiji is committed to achieving the SDGs, particularly Goal 6: clean water and sanitation for all. However, the Government has struggled to collect and consolidate the relevant data, which is gathered by various ministries and NGOs, with little sharing between them and no centralized way of bringing the information together.

UNICEF, WHO and the Fiji WASH Cluster are working with relevant ministries and Akvo, a non-profit software developer specialised in data collection and visualisation, to map the various data sources needed to measure, monitor and visualize progress towards SDG6, digitize the data collection process and identify gaps.

Together, the partners have facilitated a series of workshops aimed at building capacities within the WASH Cluster to design surveys using Akvo's data platform, finalize definitions of national indicators and create a dashboard providing a real-time overview of the WASH system.

Today, the Government is using the data gap analysis to plan for future data collection and close SDG indicator gaps. An agreement is currently being finalized that will allow ministries to share data freely – an essential step towards reducing data duplication, merging datasets and fostering open collaboration.

Delivering Results for Children

Goal Area 5: Every child has an equitable chance in life

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Every child has the right to fulfil his or her potential. And yet, extreme poverty, geography, conflict, discrimination, exclusion and other barriers hold back millions of children around the world, with lifelong consequences for themselves and their societies as inequity and deprivation perpetuate poverty across generations. Today, nearly 385 million children live in extreme poverty, which is exacerbated by a range of factors, such as conflicts, crises and the intensifying effects of climate change.[15]

15 'UNICEF Strategic Plan 2018-2021: Executive Summary'.

Strengthening social protection systems

The lives of millions of children and their families in Yemen have been torn apart by a war that has killed, injured, displaced and deprived them of access to food, health care and education.

To prevent families from further descending into poverty and help them cope with the impact of the active conflict, UNICEF and partners are delivering unconditional emergency cash transfers to nearly 1.5 million beneficiary households, aiding about 9 million people, or one third of the country's population. This social safety net project is the largest ever cash transfer project implemented by UNICEF, with partners, globally.

The delivery of cash transfers in a Level 3 active conflict environment has many risks. To ensure that the correct amount of cash reaches the correct beneficiary, risk mitigation measures have been implemented throughout the entire cash delivery mechanism. At the heart of this is Yumnn,[16] a UNICEF-supported management information system built to contain and secure the data of project beneficiaries. Since UNICEF manages Yumnn, the system can be customized at any time to adjust to project needs and address emerging risks.

In 2019, UNICEF Yemen developed several technology solutions, including mobile applications, to enhance Yumnn's capacities for real-time monitoring, reporting, management and risk mitigation:

- **Grievance collection in offline areas**: To serve those living in offline areas who are not able to contact the call centre, the team developed a mobile application for grievance collection for field-deployed staff. The grievance information only remains on the device until an internet connection is found, after which it is automatically uploaded to Yumnn and deleted from the smart phone – reducing the chance of data leaks.
- **Strengthened real-time monitoring:** UNICEF has created various dashboards to give staff a real-time perspective on the status of grievances, field monitoring and payment progress. Yumnn is able to securely store data and triangulate with additional data sources, enabling UNICEF to take swift action when issues arise.
- **Online payment plan**: A new online payment plan has been integrated into Yumnn and interacts with financial service providers through secure web services. The payment plan defines the location of the different payment sites across the country, and provides location changes as needed. All adjustments to the payment plan are done through Yumnn, and access is role based, ensuring that only authorized colleagues and service providers can view the online payment plan.

- **RapidPro integration:** RapidPro has been fully integrated into Yumnn, enabling direct communication between UNICEF and beneficiaries on key project messages. Immediate feedback is provided to beneficiaries who submit a grievance.
- **Strengthened grievance redressal:** Beneficiaries and non-beneficiaries can submit grievances regarding any part of the cash delivery process through a toll-free number to a UNICEF-managed call centre. Case management teams provide personalized assistance to all beneficiaries who need to go through the identity verification process, have lost their personal documentation or have encountered challenges when collecting their cash benefit. Incorporating case management into Yumnn has reduced human error and mitigated the risk of data loss and threats to beneficiary confidentially.

The innovative solutions incorporated into Yumnn have helped UNICEF operate more effectively in the volatile context in Yemen, quickly react to changes on the ground and reach beneficiaries in areas with active conflict and without internet connection. As a result, UNICEF is reaching more of the poorest and most vulnerable people in Yemen with higher quality services, more efficiently.

UNICEF Jordan is working with the National Aid Fund to pilot the use of real-time monitoring through RapidPro to facilitate the expansion of the Hajati Program – also known as the Integrated Social Protection Programme for Children in Jordan. Hajiti aims to increase school enrolment and decrease school drop out among vulnerable families in Jordan through the use of cash transfers.

RapidPro is allowing UNICEF and partners to improve project monitoring, strengthen accountability to beneficiaries – including through feedback and complaint mechanisms – and expand behaviour change communication.

855,000 children reached

To date, **more than 855,000 children and nearly 315,000 families have been reached through Hajati real-time monitoring efforts**. And the work being done for Hajati is directly informing similar expansions to a cash transfer program run in parallel by the National Aid Fund.

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16 The project's MIS was named "Yumnn", an Arabic word which means "prosperity, blessing, happiness and goodness." When written in Arabic Yumnn is written in a very similar way to Yemen and expresses the team's hope to see Yemen become a country where every child is able to grow and develop his/her potential.

2020 COVID-19 Box: New Partnership with local MNO's for COVID-19 Response in the Middle East and North Africa Region

Following the outbreak of COVID-19, UNICEF's Middle East and North Africa Regional Office hosted a webinar the Mobile Network Operators across the region to discuss exactly how COVID-19 was affecting children and families and to outline how the sector can support the UNICEF response. The MENA Regional Office (MENARO) worked with UNICEF Country Offices throughout the region to invite local operators to attend the industry briefing, which was Chaired by the UNICEF Regional Director. The webinar enabled UNICEF to brief MNOs on priority areas of collaboration for national response efforts which included:

1. Community awareness and engagement;
2. Ensuring children's education continues
3. Scaling actions to keep children safe during confinement (both online and offline)
4. Innovating to scale social protection systems in light of unprecedented demand.

The webinar was attended by 21 mobile network operating companies across 15 countries. Several operators shared their own experiences of how they support COVID-19 response efforts. Those that joined the call are responsible for 225.5 million subscribers in the region. Following this webinar MENARO initiated in depth conversations with ZAIN, Ooredoo and Orange. To date MENARO has finalized a Memorandum of Understanding (MoU) with ZAIN to protect and realise the rights of children to health, education, child protection and other services. The MOU will allow MENA countries where ZAIN is operating to engage with local ZAIN partners and explore areas of their support for children those countries (Bahrain, Iraq, Jordan, Kuwait, KSA, Lebanon, Sudan and South Sudan). UNICEF continues to work to secure similar agreements with Ooredoo and Orange.

Generating vital information on children and families in Romania

In Romania, local interventions – for example those undertaken by social workers, community nurses and school counsellors – are rarely captured using information technology. This poses a major challenge to the management, monitoring, supervision and evaluation of this work. Where electronic data does exist, it is scattered, often using incomparable data sets, methodologies and systems that don't speak to each other.

UNICEF developed the Aurora software to help community professionals from all sectors conduct comprehensive assessments of the vulnerabilities faced by children and families. Consisting of a mobile application and web platform, the software allows for real-time monitoring of a set of indicators, applied unilaterally for all children and across all communities, to increase the impact of social protection measures, health interventions and education policies for all children and their families in a given geographical area. Aurora not only meets the data

and information needs of local professionals, but also supports decision makers at all levels, facilitating informed and timely needs assessments on complex cases, easy monitoring of services and effective evaluation of the situation of children and families.

In designing Aurora, UNICEF worked closely with the Government of Romania, particularly the National Authority for the Protection of the Rights of the Child and Adoption. The methodology and indicators have since been incorporated into legislative acts issued at the local and central levels. To date, Aurora has been used in 100 urban and rural municipalities in 35 (out of 41) counties in three projects implemented by UNICEF or the World Bank in partnership with the National Authority for Child Rights. Nearly 36,000 children have been visited by outreach workers performing needs assessment through home visitation and the data collected can be further dis-aggregated by age, gender, ethnicity and type of vulnerability. The National Authority for Child Rights is currently working to embed Aurora into the new national information system for children.

"The Aurora application and the map of social and health services in Bacau are good practice models that could form the basis of a national platform which brings together all child-related information that all three fields – social, health and education – provide."

Gabriela Coman, President of the National Authority for the Protection of Child Rights and Adoption

Promoting adolescent development and participation

Galvanizing adolescent engagement in the Middle East and North Africa

Children and young people in the Middle East and North Africa – who account for nearly half of the region's population – have the potential to become powerful agents of change.

UNICEF recognizes that this potential will require significant investment in creating meaningful opportunities for learning, social engagement and livelihoods for young people. The Middle East and North Africa Regional Office-Adolescent Development and Participation section in collaboration with UNICEF Lebanon and ICTD, are working with T4D to strengthen mechanisms for youth engagement and participation – including with the Engagement Monitoring System (EMS).

The EMS is a real-time monitoring platform that measures young people's engagement and their perceptions of the effectiveness of UNICEF programmes. The data that the EMS generates helps UNICEF improve the quality of its services and strengthen the management and accountability of its youth engagement programmes.

10,000 young people registered
1,500 initiatives implemented

The EMS is currently operational in three countries – Jordan, the State of Palestine and the Syrian Arab Republic. To date, more than 100,000 young people are registered and over 1,500 initiatives have been implemented. Two additional countries – Djibouti and Iraq – have adopted the EMS as a tool to monitor the skills and participation of the young people attending UNICEF-supported centres.

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Involving girls in information technology in Bosnia and Herzegovina

IT Girls has been recognized as one of the key players in achieving gender equality in the IT sector in Bosnia and Herzegovina.

The IT Girls Initiative was developed by UNICEF, UNDP and UN Women to address the constraints and obstacles faced by girls and women in the information and communication technology sector in Bosnia and Herzegovina. In November 2018, representatives of the Initiative, along with Bit Alliance, launched a crowdfunding campaign, "IT Girls Come to Your Schools" to provide Arduino kits – kits for

building digital devices – and encourage girls to pursue science, technology, engineering and math.

Since 2015, hundreds of girls have taken part in IT Girls trainings and workshops designed to demystify the world of technology and inspire girls to get involved. The crowdfunding campaign has helped IT Girls raise funds for 10 Arduino workshops for 200 girls ages 13 to 15 in 2019, exceeding their original target by 150 per cent. Through extensive social media engagement, partnerships with information technology companies and the local media, the campaign has had a broad reach within the general public, the private sector and other stakeholders.

Results by cross-cutting priorities
Humanitarian action

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In 2019, global humanitarian needs grew to their highest levels yet. By the end of the year, more than 1 in every 45 people in the world – nearly 167 million people – required urgent humanitarian assistance.[17] Over the past five years, the number of people in need of humanitarian assistance has more than doubled.[1]

UNICEF's work to reach children trapped in humanitarian emergencies is at the core of our mission and mandate. But in a world where crises and conflicts are increasing in frequency, severity and duration, humanitarian work must also help lay the foundation for the long-term resilience of communities and families – by strengthening health and protection systems, providing crisis-affected families with cash transfers to meet their basic needs, and providing learning and support for children caught up in emergencies. At the same time, our development work must help reduce needs, vulnerabilities and risks over the long term to protect children against future shocks. Technology and digital innovation have a vital role to play in this work.

17 Office for the Coordination of Humanitarian Affairs, Global Humanitarian Overview 2020, OCHA, Geneva, 2019, p. 24
18 In 2014, nearly 78 million people were in need of humanitarian assistance. Office for the Coordination of Humanitarian Affairs, Global Humanitarian Overview 2015, OCHA, Geneva, 2014.

Using technology to respond to the cyclone emergencies in Mozambique

In 2019, Mozambique was struck by two Level 4 cyclones in less than eight weeks. Following the landfall of the first cyclone in March, the National Disaster Management Institute and the National Centre for Emergency Operations struggled to cope with the demands for data in the emergency response.

At the request of the National Centre for Emergency Operations, UNICEF supported the development of an information system designed to create data visualizations of the cyclone's impacts for real-time decision making. The system drew on existing technology developed by UNICEF's partner Ona: CanopyDiscovery, an open-source ecosystem designed to ingest, aggregate and visualize complex datasets from multiple sources; and Giseda, an easy and declarative approach to defining common geospatial data visualizations. UNICEF invested heavily in optimizing the information management processes and building capacities to facilitate a sustainable response for future emergencies.

The resulting site, <https://ingc-mozambique.onalabs.org>, was launched on 10 April. It comprised a map visualization containing information about the event, assessment data, impact data and data on infrastructure such as roads, schools and health facilities. A dashboard was also created to cater to the information needs of the National Disaster Management Institute and humanitarian partners and visually convey data on impact. Total investment in the project was just over US$47,000 and took only 30 days of work from the date of request, an impressive feat within a Level 3 emergency context.

When a second disaster, Cyclone Kenneth, struck

on the northern part of Mozambique on 25 April. The dashboard was able to accommodate real-time cyclone path information, allowing partners to visualize the most affected areas, populations and infrastructure, and estimate impact. Less than 72 hours after initial landfall, the Government of Mozambique was already releasing preliminary impact data on the site and initial resettlement camps were mapped with up-to-date information about the number of displaced people.

UNICEF is now supporting the expansion of this initiative to Burundi, Somalia, South Sudan and Zimbabwe as part of the Data Readiness for Improved Preparedness initiative with partners such as OCHA and WFP.

Putting crisis-affected people in Sierra Leone at the heart of the response

In 2017, three days of heavy rains triggered flash floods and a massive landslide in and around Freetown, Sierra Leone. In Regent and Lumley districts, a 6km mudslide submerged and wiped out more than 300 houses along the banks of the Juba river; and flash floods affected at least four other communities in other parts of the city. Families lost their breadwinners, loved ones and friends. More than 1,500 households were seriously affected and 500 children, women and men perished.[19] Within four days of the landslide occurring, UNICEF teams worked together to mobilize and train 300 community health workers and their peer supervisors to submit data daily via their mobile phones, using RapidPro. This data was used to inform the emergency response. Over 1,000 cases of malnutrition were identified as a direct result of this data collection and 961 children were treated. The data shared by UNICEF with WFP helped direct the distribution of therapeutic food to the most vulnerable children.[20]

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19 United Nations Children's Fund, 'Sierra Leone Mudslide Response 2017: Using digital platforms to place affected populations at the heart of the response – a case study', UNICEF.
20 Ibid.

Results by cross-cutting priorities U-Report

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Today's evolving political, economic and social challenges make it increasingly difficult to implement structural reforms. Policymaking must therefore go beyond prescriptive statements regarding the future of children and youth by engaging directly with young people on the issues and services that directly affect them.

U-Report is a free social messaging tool that empowers young people around the world to engage with and speak out on issues that matter to them – from employment to discrimination and child marriage. The data and insights gathered through U-Report are shared back with communities, as well as with the policymakers who make decisions that affect young people. Where relevant, U-Report is also increasingly being used as an important social and behaviour change communication channel. U-Report is now active in 67 countries and reaches more than 10 million users all over the world.

Box 11: How is U-Report implemented

In countries, U-Report is often governed by committee of national stakeholders, with UNICEF retaining ownership of data, branding and management of the technology.

Within UNICEF, the staff working on U-Report have multi-sectoral expertise, with a mix of programme, communication and ICT staff working together on its design and implementation.

UNICEF's regional T4D advisors provide day-to-day programme and technical assistance on the design and implementation of U-Report in countries in close collaboration with programme, communications and communication for development teams.

As an example, in East Asia and the Pacific, in 2019 the T4D regional specialist helped drive the uptake of U-Report across the region, through the deployment of five new U-Report implementations in Kiribati, the Federated States of Micronesia, the Pacific, the Philippines and Viet Nam.

Engaging beneficiaries to improve winter kits in Iraq

In Iraq, children impacted by the protracted conflict face freezing temperatures in the winter that increase their risk of illness, death and school dropout.

UNICEF's annual winterization campaign supplies winter kits to crisis-affected children and families in camp settings. While feedback is collected from beneficiaries, U-Report offered an opportunity to take a deeper look, and collect real-time beneficiary feedback on their satisfaction with the assistance and the effectiveness of the kit.

The UNICEF Iraq Adolescent Development and Participation section and the T4D team worked with partner Voices of People to pilot the use of U-Report to collect information from beneficiaries in both camp and non-camp settings. U-Report stickers were put on 690 winterization kits, requesting that users provide feedback on winter clothes and indicating how to do so. U-Report posters were also placed in distribution centres. Some 150 young volunteers were deployed in distribution centres to support families collecting winterization kits and explain how they could answer the poll. Meetings were held with camp management to gain their support for these activities.

During the pilot phase, 662 families signed up and completed the survey through U-Report, exceeding initial targets for the pilot. Respondents have provided information on the kits, their contents and what items they find most or least useful. The pilot will continue to be scaled up to support supply monitoring and collect additional beneficiary feedback on a range of issues with the aim of ultimately reaching 6,904 families with winter kits

Working with partners to engage adolescents in Guatemala

In 2019, more than 1.7 million adolescents and young people were reached through U-Report in Guatemala on a range of topics, including the Zika outbreak, youth participation in national elections, HIV awareness and cyberbullying. This significant reach has led UNICEF to position the tool as a key outreach mechanism for youth organizations, national and international NGOs and government institutions.

For example, in 2019, U-Report revealed lack of information as a primary reason why young people do not vote in the general elections. UNICEF delivered these results to the Supreme Electoral Tribunal and subsequently released informational messages through U-Report to promote the participation of adolescents and young people in the electoral process. Through a joint effort between the Government, U-Report and other partners, 19,000 messages were sent through WhatsApp and Facebook Messenger, and more than 136,000 new young people were registered to vote.

Working with the UNICEF Guatemala Protection Team, the T4D team also supported the use of U-Report to take action on bullying and cyberbullying in Guatemala. U-Report launched a survey to determine the magnitude of the problem. The responses of nearly 2,000 adolescents and young people revealed that many lack basic knowledge about bullying and cyberbullying. The information was presented to the Secretariat Against Sexual Violence, Exploitation and Trafficking in Persons and used as the basis for creating 12 digital materials designed to communicate useful information about cyberbullying. The materials have reached nearly 28,000 adolescents and young people to date.

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Advocating for exclusive breastfeeding in West and Central Africa

In 2019, the UNICEF West and Central Africa Regional Office in partnership with the Alive and Thrive initiative, launched a regional campaign calling on all countries in the region to scale up exclusive breastfeeding interventions. Entitled 'Breastmilk Only, No Water', the campaign draws attention to the practice of giving water to babies as a key barrier to exclusive breastfeeding and calls on all stakeholders to advocate for exclusive breastfeeding during the first six months of life.

U-Report is supporting the implementation of the campaign in three main ways:
1. Raising awareness, building knowledge and encouraging dialogue around the campaign theme to support social change;
2. Promoting citizen feedback at the national and local levels on the campaign and services; and
3. Monitoring changes in knowledge, attitudes, beliefs and reported behaviours on exclusive breastfeeding over time.

Since the effort was launched, 10 countries have engaged 150,000 young people, parents and community members to raise awareness of the importance of exclusive breastfeeding. Early results show notable and positive shifts in perceptions and behaviours on breastfeeding due to engagement between U-Reporters and communities during World Breastfeeding Week. The proportion of U-Reporters who said babies need water during the first six months of life decreased from 55 per cent to 32 per cent following the campaign. The 61 per cent of U-Reporters who initially believed that babies should be exclusively breastfed during the first six months rose to 77 per cent.[21]

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[21] United Nations Children's Fund, 'Good Practice Briefs: Key results for children in West and Central Africa', UNICEF.

2020 COVID-19 Box: Rapid Assessments to through U-Report and RapidPro influences decision making on COVID-19 Response in Bangladesh

As noted in the Country Preparedness and Response Plan, the Risk Communication and Community Engagement (RCCE) pillar as noted in the Country Preparedness and Response Plan aims to design, implement and monitor a collective plan of action for COVID-19 response in which partner contributions and actions complement and strengthen each other in the form of a consolidated response. UNICEF1 was nominated by Government of Bangladesh (GoB) to co-lead this pillar with the Directorate General of Health Services and the Ministry of Health and Family Welfare. RCCE pillar has 49 member organizations including representatives from Government, private sector, UN, bilateral and Civil Society Organizations and academic institute and mobilizes over 400 local NGO partners for implementation of RCCE activities. The RCCE pillar conducts a series of evidence generation activities and rapid assessments to adjust and improve RCCE materials, activities and approaches.

U-Report has been used as a rapid assessment tool on continuous monitoring of young people's behaviors, perceptions and practice with regards to preventive measures like wearing mask, social distancing and home quarantine. To date, seven rapid assessments were conducted through U-Report and the results have been shared during weekly RCCE meetings to inform the approaches, materials and strategies to facilitate positive behavioral changes. The RCCE pillar also uses RapidPro to connect with 400+ local NGO partners for monitoring and reporting their community-level RCCE activities in support for 4W reporting. U-Report/RapidPro is proven to be an effective communication tool to directly connect with young people and community members and better influence the decision making process.

Leveraging the power of big data in the Democratic Republic of the Congo

The Democratic Republic of the Congo has faced numerous epidemics and public health challenges in recent decades. In just over 10 years, the country has experienced five of Ebola outbreaks, three measles outbreaks and several episodes of cholera. In the context of the Ebola outbreak, UNICEF and the humanitarian community have struggled to assess the risk of Ebola importation due to a lack of data on the mobility patterns of communities living in or visiting Ebola-affected regions.

To address this, UNICEF has partnered with private mobile operators in the Democratic Republic of the Congo to use their mobile data to estimate patterns in human mobility. The partners have built algorithms and extracted anonymized and aggregated data from mobile phone traces that have helped yield important insights, including: forecasts on disease propagation over time; quantifications of human movement at the country and city levels; seasonal and yearly movement patterns; areas of spread as new cases appear; infection zones; and changes over time.

During the Ebola response, humanitarian actors were able to use these insights to:

1. Identify immediate, community and global risks
2. Quantify the impact of actions including the efficacy of curfews/blockades

UNICEF and partners have used these insights to inform preparedness and response planning, and going forward, intend use to population mobility data to manage other epidemics such as cholera, measles and other contagious diseases.

Results by cross-cutting priorities Innovation and frontier technology

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The 2019 global evaluation of innovation in UNICEF recommended that leadership for digital innovation be housed within the Information Communication Technology Division (ICTD), which should bring together the various headquarters' divisions working on digital innovation. The evaluation also noted that UNICEF's decentralized nature was essential to fostering innovation, and that UNICEF country offices are best placed to develop locally-tailored solutions, in line with national priorities.

UNICEF's regional ICT teams and country programme teams have therefore taken on the over-sight, technical assistance and quality assurance of the design and implementation of innovation and frontier technologies in at the country level. These teams are also supporting multi-country and inter-agency partnership engagements in various areas, such as child rights and artificial intelligence, drones technology, UNDP accelerator labs and regional and country innovation challenges.

Artificial intelligence and child rights

Progress in artificial intelligence systems is expected to profoundly impact life and work in the 21st century, raising both hopes and concerns for human development.

Children are already using digital tools that utilize artificial intelligence systems: from social media face filters, content recommenders and language translation apps; to personalized learning tools that can expand access to and quality of education; and big data analysis and insights that can quickly detect diseases and improve healthcare, manage traffic flows for safer cities, or improve crop management for increased food security.

On the downside, artificial intelligence systems raise issues of privacy, accountability, recourse and exclusion, particularly for children. Without a human-centred foundation for artificial intelligence development,

children's rights to privacy, learning, play, participation and development are at risk. In addition to putting safeguards and ethical standards in place, children need to be prepared for the future with relevant skills and literacies.

A number of governments, businesses, civil society organizations and researchers are rightly concerned about the future of artificial intelligence for societies. They recognize the current window of opportunity to lay down ethical and policy safeguards, and to practically develop the software, algorithms and data standards needed to maximize the benefits while limiting the risks of an artificial intelligence future. Yet, initial findings indicate that the impact of artificial intelligence on children is largely missing from these concerns and efforts. It appears that for governments, the private sector and civil society, there is a policy vacuum for considered and practical guidance on artificial intelligence and children.

UNICEF's Office of Global Insight and Policy and T4D team, in partnership with the Government of Finland, is thus developing policy guidance for governments, businesses, the non-profit sector and UNICEF itself, which, if applied, will help create environments that support the safe and beneficial use of artificial intelligence systems for children's development. UNICEF will lead the creation of the guidance in partnership with the Institute of Electrical and Electronics Engineers Standards Association and in collaboration with the Berkman Klein Centre for Internet & Society, the World Economic Forum and other organizations part of Generation AI, as well as interested governments.

Beyond creating the policy guidance, a key challenge is how to translate guidelines into practice. Implementing guidelines poses difficult decisions, such as finding the balance between the right to privacy and the benefits of big data-fuelled interventions that can protect children. The guidance will thus be piloted with policymakers in select countries for validation and learning, as broad principles are adapted to different country contexts. Such implementation will create case studies for other countries to learn from and provide feedback that can inform subsequent versions of the guidance.

Exploring the use of drones for humanitarian action and development

UNICEF has identified drone technology and drone-based services as way to strengthen and improve its work in global health and community resilience. The organization has developed a drone programme to better understand these opportunities, address key considerations on the use of drones, and craft a practical way forward for UNICEF to globally leverage this technology to protect and advance the rights of children. The programme is exploring a range of applications, including vaccine delivery and transport; improved connectivity in hard-to-reach communities; and aerial imaging for better preparedness and response in emergencies.

UNICEF Vanuatu – in partnership with the Government of Vanuatu and the support of UNICEF's Innovation Fund – is exploring the use of drones to increase the availability of vaccines and decrease logistics costs. Vanuatu's geography poses huge challenges on vaccine distribution. With 65 inhabited tropical islands stretching across 1,600 km ofver the Pacific Ocean, expensive, traditional land transport; and only 20 islands that have airfields, vaccinators have to cover major distances to replenish their stocks.

In December 2018, UNICEF facilitated one of the first commercial vaccine deliveries by drone in a remote island of Vanuatu. The vaccine delivery covered almost 40 kilometres of rugged mountainous terrain from Dillon's Bay on the west side of the island to the east landing in remote Cook's Bay, a small, scattered community that does not have a health centre or electricity, and is only accessible by foot or small local boats. Thanks to the drone delivery, 13 children and five pregnant women in Cook's Bay were vaccinated by a registered nurse.

In addition, in a global first, the Government of Vanuatu awarded three commercial contracts to two drone companies - Swoop Aero of Australia and Wingcopter of Germany. These companies have designed and implemented logistic procedures for vaccine supply chain by drone, and provided training to local health workers receiving the vaccines at rural facilities. Between January and May 2019, the companies delivered vaccines to more than 1,100 children under 1 year from seven distribution centres to 48 rural health facilities on Vanuatu's Pentecost, Epi, Shepperd and Erromango islands.

In the long run, the Government of Vanuatu is interested in integrating the drone delivery of vaccines into their national immunization programme and using drones more widely to distribute health supplies. The drone policies and regulations developed for Vanuatu, in collaboration with the country's Civil Aviation Authority and with support from the Global Fund, will also be used by the International Civil Aviation Organization as a better practice for global recommendations on how to safely use drones for humanitarian missions.

In Malawi, more than 15 companies, universities and research centres from all over the world have tested their drone technology and services in Malawi's drone corridor. These organizations have collected aerial images that are being used to train algorithms that help identify infrastructure (e.g. schools, clinics, water sources), prevent natural disasters (floods and mudslides) and diseases (malaria and cholera), and improve crop yield and water management for farmers. The companies and universities who used the corridor have also conducted drone workshops to benefit over 100 young Malawian technologists and students. With the support of regional Health and ICT teams, UNICEF launched the African Drone and Data Academy in March 2020 to expand local capacities and opportunities in neighbouring countries.

In addition, four Kazakhstan and Central Asian drone companies have tested drone technology for search and rescue operations, wildfire response and mountain mapping. UNICEF Kazakhstan, in collaboration with Kazakhstan's Centre for Emergency Situations and Disaster Risk Reduction, conducted a training seminar on how to use drones for emergency response. Forty-two participants from emergency response agencies in Kazakhstan, Kyrgyzstan and Afghanistan participated in this event.

Pioneering innovation and frontier technologies in Guatemala

Most childhood social indicators in Guatemala are stagnant or have receded, seriously affecting the dignity and quality of life of millions of children and adolescents and representing a clear breach of their fundamental rights. UNICEF Guatemala has integrated innovation and technology into its Country Programme to accelerate results for children and create an enabling environment for others to innovate with and for children in Guatemala. In 2018 and 2019, UNICEF Guatemala undertook a number of projects leveraging innovations and frontier technologies, including using innovation challenges to identify solutions to ending violence in schools.

Globally, half of students aged 13–15 – about 150 million students – experience peer-to-peer violence in and around school. In Guatemala, at least 14 per cent of elementary school students suffer bullying and about 81 per cent of students report being afraid of violence at school.

To address these challenges, UNICEF Guatemala convened diverse sectors, including academia, government, business, civil society and others to co-create and generate solutions using technology and evidence. The result was the implementation of an Ideathon designed to generate innovative approaches to preventing violence against children and protecting children in educational environments.

In a two-day design thinking workshop, 62 innovators from around the country met to explore design solutions using a human-centred approach to addressing school violence, including bullying, cyber-bullying and sexual violence. The result was 12 technology solutions, including mobile applications, interactive games, user-centred products and services and open collaboration networks, which were evaluated by a group of adolescents and a committee of national and international experts. The evaluators considered the solutions' impact, relationship to child protection principles, implementation time, incorporation of technology, partnership opportunities and sustainability.

The two most promising ideas were selected, and each were awarded US$2,500 seed funding by a private sector partner, as well as mentoring support to implement their projects over the coming months. The incubation and acceleration of these solutions will ensure rapid learning and foster collaboration among critical stakeholders to solve the most pressing challenges facing Guatemalan children.

Results by cross-cutting priorties: Digital innovation and T4D capacity development

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Building capacities on health systems strengthening

In partnership with the University of Melbourne Nossal Institute for Global Health, UNICEF developed a global blended learning course on health systems strengthening. The Eastern and Southern Africa Regional Office Health team and ICTD/T4D supplemented this training with a regional, one-week, face-to-face course adapted to the regional context; and developed two new modules covering health information systems and digital health. Approximately 90 UNICEF health staff from across the region received this supplementary training in November 2019 in Addis Ababa. Course curriculum and additional tools can be found at:

https://unicef.sharepoint.com/teams/WCARO-PHCSSAfrica

Leveraging business intelligence for data use:

In 2019, the West and Central Africa Regional Office supported various data visualization and business intelligence initiatives. The initiatives are focused on the production of dashboards and digital reporting systems that will improve efficiencies and enable better decision-making.

Key systems include:
- The Key Results for Children dashboard, which reports on the eight priority areas for children in West and Central Africa;
- The MODA dashboard, which supports the generation of quality evidence on child poverty and analysis of single, multiple and cross-country deprivation in lower

and middle income countries;

- The Birth Registration Statistics Monitoring dashboard, which aggregates and displays results on birth registration in countries implementing real-time monitoring using Rapid Pro;.
- The Polio Dashboard, which tracks polio immunization results in 11 countries;
- The E-View Dashboard on education, WASH and nutrition interventions in the Niger, which facilitates follow-up on humanitarian action; and
- The Nutrition dashboard, which creates automated monthly reports on severe acute malnutrition data.

The West and Central Africa Regional Office has also used Data Savvy catalytic funding to build capacities on data use and visualization in Côte d'Ivoire, Guinea and Sierra-Leone. And across the region, country offices are being supported to create information platforms and adopt and adapt organizational tools and standards to their specific contexts.

Another component of T4D efforts in the field, in collaboration with planning monitoring and evaluation teams, is support for country offices in the production of their information platforms, leveraging organizational tools and standards that are available, but require a change management strategy to be adopted and adapted.

In addition, East Asia and the Pacific held a number of regional T4D training events, including a joint South Asia/East Asia and Pacific Technology for Progamme training in Bangalore in 2018, ArcGIS Geospatial Information Systems Training in collaboration with UNITAR/UNOSAT and a T4D Bootcamp designed and delivered for Regional UNICEF Programme Advisors.

Building capacity for digital innovation and programming

In anticipation of the increased engagement and demand for ICT staff to support UNICEF's digital present and future, ICTD is embarking on a significant capacity-building exercise to support ICTD and T4D colleagues to engage more effectively with programme and planning colleagues and national partners.

The objective of the T4D capacity strengthening initiative is to bolster internal skills and competencies to design and implement T4D/digital/ICT initiatives in support of UNICEF's Strategic Plan and in line with national goals and priorities. A secondary goal is to support national capacity to design and implement digital innovations, digital programming and technology for development solutions as part of UNICEF-supported programming.

In September 2019, over 40 ICT, T4D, Innovation and programming staff convened in Bangkok to participate in UNICEF's face-to-face T4D training pilot for UNICEF

regional staff in South Asia, East Asia and the Pacific. The training aimed to create a shared understanding of holistic and system-level approaches to integrating T4D into programming and ensuring the interoperability, scalability and sustainability of digital programming and innovative solutions and approaches, including digital public goods.

In parallel, the regional offices for Eastern Europe and Central Asia, Middle East and North Africa and Latin American and the Caribbean, all incorporated various face-to-face training modules into their own network meetings and delivered tailored trainings for ICT staff.

In addition to the face-to-face training, UNICEF's T4D learning package includes T4D e-learning courses on AGORA, T4D peer exchanges on Yammer, a T4D webinar series, experiential learning opportunities and guidance. The holistic learning package aims to strengthen staff understanding of the transformation of ICT in UNICEF to enable digital innovation and digital programming, and improve overall staff capacity to engage in digital programming and digital innovation in the field and based on lessons and experience, to help accelerate results for children.

Part 4: Partnerships

ICTD would like to express its gratitude to the partners who have contributed to and supported the work described in this report, and who have made a difference in the lives of millions of children and their families. The achievements described here were the result of these continued partnerships and would not have been possible without your collaboration.

Private Sector

Airtel	Nokia Foundation
AXA and Credit Agricole Egypt	Philips Foundation
ARM	Praekelt Foundation
Dalberg	Roche
EcoNet	The Rockefeller Foundation
The Elma Foundation	SAP
Facebook/WhatsApp	Smart Communications
The Elma Foundation	Telenor Group
Fondation Botnar	TiGO
Johnson & Johnson	Uganda Telecom
JOOX	VIAMO
IKEA Foundation	Vodafone
ING	Zain Telecom
La Caixa Foundation	
Mastercard	
Microsoft	
MTN	
New Legacy Digital	

Development Partners

Abertis Foundation

African Development Bank

ADF

Aga Khan Foundation

Agence Francaise de Development

AMREF

Bill and Melinda Gates Foundation

Clinton Foundation

Communicating with Disaster Affected Communities Network

Department of Foreign Affairs and Trade, Australia

Digital Campus

The Digital Impact Alliance (DIAL)

Digital Square

Dimagi

European Civil Protection and Humanitarian Aid Operations

European Union

GAVI

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

Global Polio Eradication Initiative

Global Fund

Global Financing Facility

Global Partnership to End Violence Against Children

GSMA

Health Development Fund

Health Enabled

International Labor Organization (ILO)

International Telecommunication Union

IntraHealth

Korea International Cooperation Agency

Last Mile Health

Malaria Consortium

Medic Mobile

Ministry of Foreign Affairs and Trade, New Zealand

Ona

PATH

The Rockefeller Foundation

Swedish International Development Agency (SIDA)

The United Kingdom Department for International Development

United Nations Institute for Training and Research

The United Nations Development Programme

The United Nations Global Pulse

The United Nations Partnership on the Rights of Persons with Disabilities (UNPRPD)

The United Nations Population Fund

The United States Agency for International Development (USAID)

UNOSAT

WePROTECT Global Alliance

The World Bank

World Food Programme

The World Health Organization

UNICEF National Committees

UNICEF National Committee of Australia

UNICEF National Committee of Norway

UNICEF National Committee of Scotland

UNICEF National Committee of Sweden

UNICEF National Committee of Switzerland

UNICEF National Committee of the United States

Academia

African Data and Drone Academy (ADDA)

Cambridge University Press

Far Eastern University (FEU)

Johns Hopkins University

Makerere University

Solomon Islands National University (SINU)

University of Dar es Salaam

University of Geneva

University of Oslo, Norway

The University of the South Pacific (USP)

Part 5: Priorities and the way forward

For UNICEF, the back-office ICT support function has been reimagined as a digital programming and digital innovation function. Structuring, supporting and investing in digital innovation and Digital Public Goods will be critical to enhancing UNICEF's digital capabilities, as ICT enables its programme, field and emergency digital transformation strategy.

In line with ICTD's leadership on digital innovation, UNICEF will set technology and innovation digital portfolio guidelines to improve coordination and coherence in the field and maintain oversight across its global structure. The portfolio management approach will help UNICEF align technology and digital innovation activities to priority areas or issues, and enhance the organization's ability to make strategic resource allocation choices.

ICTD will continue to standardize and scale governance and management tools, including INVENT, the T4D and Innovation Inventory Portal and develop a T4D Playbook. At the country level, this will better position ICT as a trusted programme partner, inform investment priorities and manage risk to create a safer space to support digital transformation and innovation.

As recommended in UNICEF's internal evaluation of innovation, establishing a portfolio management approach is critical to aligning technology and digital innovation activities to priority areas or issues, enhancing the organization's ability to make strategic resource allocation choices, and maintaining oversight across its global structure. INVENT, the T4D and Innovation Inventory Portal will form a key foundation of the global portfolio.

Capacity-building efforts are underway across all regions to facilitate reskilling of existing ICT and programme staff, to better equip them to embrace digital programming, which will continue to expand in the years to come.

ICTD will continue to support alignment, coherence and engagement with governments, donors and other partners on digital public goods to improve efficiencies and the rationalization of tools and approaches in often fragmented digital programming environments. This will include advocating for fiscal sponsorship and stable sources of funding to support product development and maintenance, and continuing advisory support and technical assistance to governments and UNICEF country offices on the use of digital public goods within countries and globally.

UNICEF is increasingly identifying strategic opportunities to engage with national partners on eGovernment policies, ministries of ICT, communications commissions and universal service funds to better anchor UNICEF's digital investments with emerging national structures. This is expected to strengthen national management while decreasing costs through shared service offers and domestic revenue streams. ICTD aspires to secure a flexible funding pool that will be used to invest in digital innovations that align with UNICEF's Strategic Plan and national goals and priorities.

ICTD will also enhance private and public sector partnership engagement. Opportunities to join forces with the private sector will play a significant role in helping to identify, pilot, scale and sustain digital programming approaches, and the proliferation of digital public goods, for the benefit of children worldwide.

Futher Information

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