Global Tech – Innovative Solutions for Inclusive Growth

Learn from regional pioneers. Share what's working. Join the community.

29.11.2021

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For the European Commission's European External Action Service (EEAS) and Service for Foreign Policy Instruments (FPI)

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Disclaimer

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Foreword

With increasing risks and the related threats of an interconnected and complex world, closer cooperation in digital matters is needed, as well as new types of international networks connecting citizens, government and the private tech sector.

Convened by High Representative Borrell, the **#GlobalTechPanel** brings together leaders from the tech industry, the world of investment, and civil society. The aim of the Global Tech Panel is to foster new types of cooperation between diplomacy and technology to address challenges and threats but also to make innovation a true force for good in an increasingly more complex and connected world. The Global Tech Panel is a forum for the open discussion and practical development of innovative solutions; it focuses specifically on the nexus between tech and common foreign and security policy.

Under the European Commission's Partnership Instrument Policy Support Facility (PSF) a compendium of successful cases is being developed in support of the Global Tech Panel's objectives overall, and its work stream on boosting digital jobs and skills for human development. As part of this project, the COWI consortium has compiled a compendium of success stories on digital transformation and business innovation focusing on the fields of health, education, and inclusive digital connectivity to feed into the compendium.

This slide deck summarises selected cases identified to date for the purpose of outreach by the European External Action Service (EEAS), the European Commission's Service for Foreign Policy Instruments (FPI) and the Global Tech Panel. The cases presented here are part of a database of more than 75 success stories identified so far.

Rationale and Methodology

Success stories abound from across the world, where committed and creative people have collaboratively solved challenges in their communities through digital technologies, working together in unexpected and creative partnerships, often with limited resources. These solutions which are addressing complex problems in fields such as health, education and inclusive digital connectivity could be replicated with the right mix of policies and political will.

The cases presented here were selected according to the following **eligibility criteria**:

Focus Areas
- Health
- Education
- Inclusive digital connectivity

Success stories with track record of proven impact
- Proven and demonstrable impact
- Sustainable impact
- Scalable success
- Replicability, provided certain (identifiable) preconditions are in place

Multi-stakeholder approach, ethics and inclusiveness
- Involvement of Government (local, regional or national)
- Geographical diversity
- Cases involving local communities, not only national authorities
- Digital inclusiveness
- EU ethics, data privacy and other digital guidelines must be respected

Health

The selected cases under the **Health** sector aim at addressing the following challenges

01

Addressing child and maternal mortality

ID 64 – Nighedaasht

02

Fighting epidemics and illnesses (e.g., Covid-19, HIV, Polio, Ebola)

ID 12 – AVADAR
ID 31 – SORMAS

03

Ensuring health coverage for all

ID 24 – District Health Information Software
ID 34 – MonTelNet
ID 76 – CURE
ID 68 – Sevamob

04

Empowering women

ID 36 – doctHERs

AVADAR

Eradicating Polio with an SMS-based mobile application

AVADAR is an application used by health workers and volunteers for reporting, monitoring and surveillance of poliovirus in selected hard-to-reach districts.

Data sets: Demographic data, geolocation data

Platform used: Custom application - AVADAR

Link to website/GitHub: N/A

Link: https://www.ehealthafrica.org/avadar

Team member: Evelyn Castle

Contact details: evelyn@ehealthafrica.org

ID 12 AVADAR
Nigeria

Burkina Faso, Cameroon, Central African Republic, Chad, the Democratic Republic of Congo, Liberia, Mali, Niger, Nigeria, Sierra Leone, South Sudan

AVADAR - Eradicating Polio with an SMS-based mobile application

AVADAR is an SMS-based mobile application used for reporting, monitoring and surveillance of poliovirus. On a weekly basis, the health workers and volunteers in selected hard-to-reach districts use the AVADAR application to report whether they have noticed any children with paralysis of a limb. The AVADAR project has been implemented in 8 countries across West and Central Africa to improve the quality and sensitivity of Acute Flaccid Paralysis (AFP) surveillance.

Impact

Results from two phases of tests conducted in Nigeria in 2018 point to the effectiveness of the mobile application in the surveillance of AFP: 6,746 community informants have been trained in eight countries; 68,982 suspected AFP alerts investigated by Disease Surveillance Officers; 1,648 confirmed true AFP cases; 5,591,753 people being observed for AFP in six countries and 29,117 suspected AFP cases reported in 2019. A multi-country mobile based project fighting a virus epidemic, and an important step towards the global “end game” for polio.

Challenge addressed

In response to the 2016 reported cases of wild poliovirus in Nigeria, eHealth Africa (eHA) partnered with the Bill and Melinda Gates Foundation, the World Health Organization, and Novel-T to pilot a mobile-based surveillance app for Acute Flaccid Paralysis (AFP) in children. eHA operationalized the use of the new Auto-Visual AFP Detection and Reporting (AVADAR) app to detect true cases of AFP, for the purpose of identifying and responding to potential cases of polio.

Theme: Health
Timeframe: 2016 - Present
More information: https://www.ehealthafrica.org/avadar

District Health Information Software (DHIS) 2

Transforming the Bangladesh health information system

The DHIS2 system connects central, divisional and district levels with sub-district health facilities and over 13,000 community clinics in Bangladesh. This is one example of the successful adoption of the DHIS2 open-source platform.

Data sets: Metadata for selected diseases

https://dhis2.org/metadata-package-downloads/

Platform used: DHIS2 is a web app based on Java technology

Link to website/GitHub: https://github.com/dhis2/

Link: https://dhis2.org

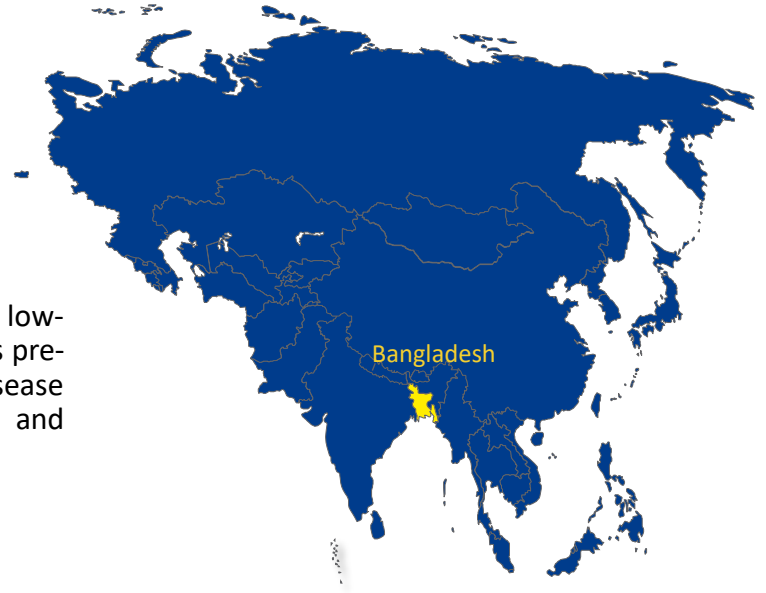
Team member: Max Krafft

Contact details: max@dhis2.org

ID 24 DHIS2 Bangladesh

Bangladesh

DHIS2 - Transforming the Bangladesh health information system



DHIS2 is an open source, web-based platform most commonly used as a health management information system (HMIS) in low- and middle-income countries. In collaboration with WHO, a DHIS2 Health Data Toolkit has been developed, which includes pre-configured DHIS2 metadata packages for several health programs, including TB; HIV; Malaria; Immunization (EPI); Disease Surveillance (IDSR); Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCAH); CRVS and Mortality; and COVID-19 surveillance and vaccine delivery.

Impact

Today, DHIS2 is the world's largest HMIS platform, in use by 73 low and middle-income countries. Approximately 2.4 billion people live in countries where DHIS2 is used. Including NGO-based programs, DHIS2 is in use in more than 100 countries. Each DHIS2 instance may be used to manage data for several health programs, such as HIV, TB, Malaria, COVID-19, and maternal and child health.

Challenge addressed

Bangladesh Health Information System was built in a disorganised manner, around the particular needs of programmes and organisations. Access to antenatal care was low and malnutrition was also a concern.

In 2009, Bangladesh took on the mission to achieve "Digital Bangladesh by 2021", in an effort to strengthen the health system through a well-functioning health information system.

Theme: Health
Timeframe: 2009 - Present
More information: https://dghs.gov.bd/index.php/en/home/113-english-root/dhis2

MonTelNet

Connecting remote regions to healthcare centers

Mongolian Telemedicine Network (MonTelNet) connects the provincial hospitals of all 21 provinces with the leading medical institutions and specialist clinics in Ulaanbaatar.

Data sets: Pathologic micro and radiology images, and diagnostic documents

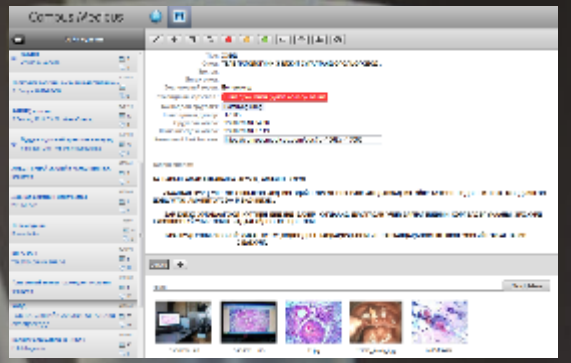
Platform used: Campus Medicus and Case io

Link to website/GitHub: N/A

Link: Website

Team member: Erdenetsogt Dungubat

Contact details: erdenetsogtod@gmail.com



ID 34 MonTelNet Mongolia

Mongolia

MonTelNet - Connecting remote regions to healthcare centers

The development of the Mongolian Telemedicine Network (MonTelNet), which now connects the provincial hospitals of all 21 provinces with the leading medical institutions and specialist clinics in Ulaanbaatar, is a new joint undertaking within the framework of development cooperation between Switzerland and Mongolia. It was initiated in 2008 in consultation with the Mongolian Health Ministry. Under the MonTelNet project all province hospitals were equipped with hardware necessary for practicing telemedicine, in particular with computers with digitalized microscopes and cameras.

Impact

Dr. J. Munkhbayar, a pathologist who works at the Khuvsgul hospital reported that . «A few years ago, we had to send a monthly average of up to 20 tissue samples and smears for histological and cytological examination all the way to Ulaanbaatar. Today, we obtain reliable findings within a few minutes using a microscope, camera and image transmission». An evaluation of the diagnostic accuracy of MonTelNet (review of 212 telepathology diagnoses delivered to the local experts in Ulaanbaatar between January 2009 and June 2013) showed a high accuracy of the telepathology diagnosis.

Challenge addressed

One of the critical weaknesses of the Mongolian healthcare system is the lack of networking between the provincial hospitals and the medical and laboratory know-how at the disposal of specialists at the large medical and scientific institutions located exclusively in the capital. Access to these is especially essential when the doctors at the province hospital reach the limits of their possibilities and have to rely on the fast and efficient diagnostic and therapeutic decision-making support of their professional colleagues.

Theme: Health
Timeframe: 2008 - Present
More information: https://www.eda.admin.ch/dam/deza/en/documents/publikationen/briefing-papers/asia-brief-5-2013_EN.pdf

doctHERs

Empowering women doctors through remote consultations

doctHERs matches the underutilized capacity of female doctors to the unmet needs of health-seeking beneficiaries via trusted intermediaries such as nurses and community health workers using the power of technology (telemedicine).

Data sets: N/A

Platform used: Video-consultation based on existing online portal (MD Consult), tablets, smartphones

Link to website/GitHub: N/A

Link: https://www.docthers.com/

Team member: Nazia Bilal

Contact details: nazia.bilal@docthers.com

ID 36 doctHERs Pakistan

Pakistan

doctHERs - Empowering women doctors through remote consultations

doctHERs reintegrates female healthcare providers who have been excluded from the workforce by using a digital health platform that connects remotely-located female doctors (who work from home) to health consumers in need via trusted intermediaries such as tablet-equipped nurse/midwife-assisted video-consultation (telemedicine). Lower-middle income frontline health workers (community health promoters, nurses and midwives) are recruited, trained and equipped with technology - hardware, software and Wi-Fi/broadband connectivity.

Impact

doctHERs has impacted more than 1 million lives in Pakistan, offering more than 1000 job opportunities to female doctors. Particularly, doctHERs has provided over 25000 paid video-consultations to low-income workers in corporate value chains including 6000 consultations that have focused on educating low-middle income women on breast cancer, self-examination and mammography. doctHERs believe that the re-integration of women into the workforce (output) by leveraging technology (input) will yield increased economic empowerment for women.

Challenge addressed

In Pakistan, 80% of medical school graduates are women, yet only 25% of these women go on to practice their profession due to socio-cultural constraints resulting in 65 000+ licensed female physicians of Pakistani origin excluded from the global health workforce. Not only is this a massive loss in human potential, but also a market failure in a nation where 80% of the population is unable to access affordable, quality healthcare.

Theme: Health
Timeframe: 2014 - Present
More information: https://www.docthers.com/

Nighedaasht

Digitalising antenatal care services to reduce child mortality

Nighedaasht improves the quality, coverage and access to maternal, newborn and child health services in remote rural areas.

Data sets: Various data sets subdivided into different categories such as Pregnancy, ANC visits, Medical history, Labour and delivery, Postnatal visit data, Referral information

Platform used: Android PHP MySQL

Link to website/GitHub: N/A

Link: Doctor version and Midwife version

Team member: Saleem Sayani

Contact details: saleem.sayani@aku.edu

ID 64 Nighedaasht Pakistan

Pakistan

Nighedaasht - Digitalising antenatal care services to reduce child mortality

In 2018, Aga Khan Development Network and the Aga Khan Health Service developed and launched an mHealth app, Nighedaasht, in remote, rural areas of Gilgit-Baltistan and Chitral (Pakistan) in an effort to improve maternal, newborn and child health outcomes. The app aims to improve the quality, coverage and access to maternal, newborn and child health services by digitising antenatal care, the delivery process and postnatal care; strengthening the referral system between community midwives and gynecologists; and building capacity of community midwives through educational videos.

Impact

From January to April 2019, Nighedaasht has helped serve 1,224 mothers, supported community midwives with 556 deliveries and tracked 138 referrals. Currently, the app is being used by 49 midwives and 8 physicians. During 2021, the Nighedaasht application was merged with the Hayat application, which helps monitor health worker activities in the field for Reproductive, Maternal, Newborn and Child Health (RMNCH) services along with immunisation and child growth and illness. Nighedaasht was awarded Top prize for the Maternal and Neonatal Health category at the Commonwealth Digital Health Awards (CDHA) in 2018, which recognise, on a yearly basis, the best digital health innovations in the 53 Commonwealth countries, striving to raise the standards of healthcare and wellbeing.

Theme: Health
Timeframe: 2014 - Present
More information: https://www.docthers.com/

Challenge addressed

Pakistan has the third-highest burden of maternal, fetal and child mortality in the world. Gaps in both health service delivery and policy levels have led to deteriorating maternal, newborn and child health outcomes, especially in remote and rural areas.

Nighedaasht was awarded Top prize for the Maternal and Neonatal Health category at the Commonwealth Digital Health Awards (CDHA) in 2018, which recognise, on a yearly basis, the best digital health innovations in the 53 Commonwealth countries, striving to raise the standards of healthcare and wellbeing.

Sevamob

AI enabled healthcare for low-income population in India

Sevamob delivers primary healthcare through mobile clinics to low-income groups for an annual subscription.

Data sets: N/A

Platform used: Customised platform https://seva360.com

Link to website/GitHub: N/A

Link: https://sevamob.com/

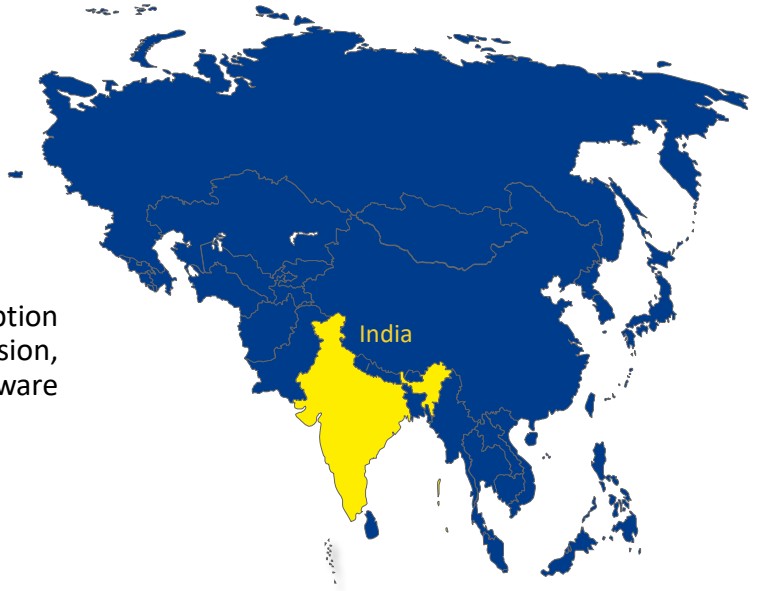
Team member: Shelley Saxena

Contact details: saxenas@sevamob.com

ID 68 Sevamob India

India

Sevamob - AI enabled healthcare for low-income population in India



Sevamob is a prime mover in the industry combining primary healthcare and health insurance into a monthly subscription model that yields better health outcomes at a cost up to 80% less than other options. Care includes general health, vision, dental, nutrition, cardio-metabolic, infectious disease and ENT. Sevamob monetizes it via service delivery and software licensing.

Impact

Launched in 2012, Sevamob achieved 20,000 patient consultations per month across six Indian and South Africa by 2017. At that point about 500 organizations were using their AI-based diagnostic service.

Since then, the company has been growing.

Challenge addressed

In India, vulnerable communities have limited access to affordable healthcare. As a result, the average life expectancy is 14 years less than that in developed countries, while the maternal and child mortality rates are eight times and 20 times higher, respectively, than those in the United States. But while healthcare represents a huge potential market in a country of 1.2 billion people, few companies have been willing to invest in building a health infrastructure for those at the bottom of the pyramid.

Sevamob was selected by Gartner as Cool AI healthcare vendor in 2019, and Company of the Year by CIOReview, India in 2019.

Theme: Health
Timeframe: 2012 - Present
More information: https://www.sevamob.com/gaon/index.jsp

CURE

3D-printed bionic hands easy to use thanks to an AI-based algorithm

CURE improves the lives of disabled people in Tunisia by making high-tech bionic limbs more accessible and affordable to those who need them.

Data sets: N/A

Platform used: N/A

Link to website/GitHub: N/A

Link: https://dhaouafimed.wixsite.com/curetunisie

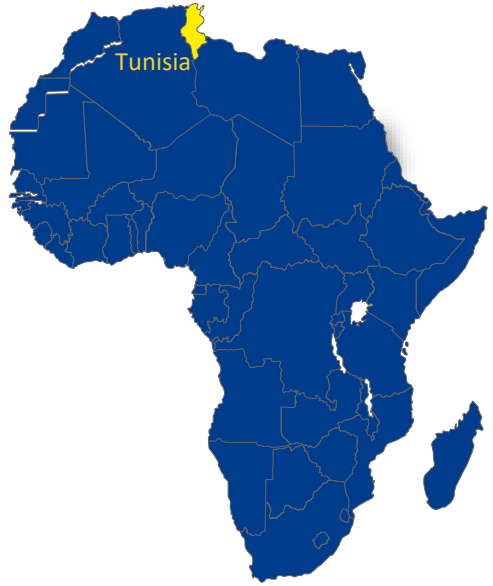
Team member: Mohamed Dhaouafi

Contact details: dhaouafimed@gmail.com

ID 76 CURE
Tunisia

Tunisia

CURE - 3D-printed bionic hands easy to use thanks to an AI-based algorithm



CURE is a Tunisian-based bionic startup that develops affordable 3D printed bionic prosthetics that are customizable and easy to use thanks to an Artificial Intelligence algorithm and that imitate the biological human limb behavior. The start-up also provides a therapeutic solution that uses virtual reality and gamification allowing them to get rehabilitation but also training on how to use their future prosthetics. In the absence or limitation of electricity access, the bionic arm can still be used thanks to a solar and wireless charger.

Impact

CURE provides low-cost solutions to those who need them ($2,000 per item only). Although it is still in testing phase, it has been selected as one of main projects of the Barack Obama Foundation connecting leaders of change in Africa.

Challenge addressed

The founder began to research prosthetics after learning that one of his peers had a relative who was born without upper limbs and could not afford prosthetics. The founder quickly discovered that this is not uncommon: Of the approximately 30 million people in developing countries who have amputated limbs, only 1.5 million can obtain prosthetics.

Theme: Health
Timeframe: 2017 – Present
More information: https://dhaouafimed.wixsite.com/curetunisie

SORMAS

A user-friendly software for disease surveillance and outbreak response

SORMAS (Surveillance Outbreak Response Management and Analysis System) is an open-source, mobile eHealth platform which facilitates the collection, organisation and analysis of real-time data for both disease surveillance and outbreak response.

Data sets: N/A

Platform used: SORMAS

Link to website/GitHub: https://github.com/hzi-braunschweig

Link: http://sormas.org

Team member: Gerard Krause

Contact details: sormas@helmholtz-hzi.de

ID 31 SORMAS
Nigeria

Nigeria

SORMAS – A user-friendly software for disease surveillance and outbreak response

SORMAS is an open-source, mobile eHealth platform which facilitates the collection, organisation and analysis of real-time data for both disease surveillance and outbreak response. It has been a success story for dealing with many epidemics (especially with Ebola) including COVID-19. SORMAS allows real-time, bidirectional information exchange between field workers and the Nigerian Emergency Operations Centres, ensures supervision of contact follow-up, automated status reports, and GPS tracking. SORMAS is an open-source, mobile eHealth platform which facilitates the collection, organisation and analysis of real-time data for both disease surveillance and outbreak response and has been designed specifically to operate in resource-poor settings.

Impact

SORMAS has come a long way since the development of the early prototype and its field testing in two Nigerian states in 2014-2015: by early 2020, the platform had been introduced in two regions of Ghana and rolled out to 15 Nigerian states covering a population of around 75 million people - larger by far than the populations of most African countries. To date, the platform covers more than 12 epidemic-prone, high-priority diseases, including COVID-19, and an 'Emerging Disease X' functionality allows for the immediate inclusion of new diseases as they emerge.

Challenge addressed

Nigeria suffered and continues to face major disease outbreaks. Following the Ebola outbreak in 2014, the country deployed a mobile application to facilitate early detection and response, and provide accurate, real-time data for decision-makers – critical for managing outbreaks of epidemic-prone infectious diseases. In 2017, the application was quickly adapted to support the management of new diseases, including monkeypox, cerebrospinal meningitis, Lassa fever and measles, and actively rolled out in large parts of the country.

Theme: Health
Timeframe: 2015 - Present
More information: https://sormasorg.helmholtz-hzi.de/

Education

The selected cases under the **Education** sector aim at addressing the following challenges

01

Enhancing teachers' digital knowledge and training

ID 46 – eSchools programme

02

Improving access to education (especially in rural areas)

ID 72 – Increasing student learning
ID 73 – Livox
ID 77 – Recode

03

Supporting refugees in their labour market reinsertion

ID 30 – ReBootKamp (RBK)
ID 45 – Empowerment in Action Initiative

04

Fostering knowledge sharing

ID 43 – MoMaths project
ID 74 – WomenTechsters
ID 78 – Chief Science Officers

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MoMaths

Bringing mathematics into the social networking space

MoMaths is a project which uses mobile phones to provide South African students in Grade 10 with access to math content and support.

Data sets: N/A

Platform used: Social media application MXIT

Link to website/GitHub: N/A

Link: https://www.un.org/en/ecosoc/innovfair2011/docs/nokia.pdf

Team member: Riitta Vänskä

Contact details: riita.vanska@sitra.fi

ID 43 MoMaths
South Africa

South Africa

MoMaths - Learning service that brings mathematics into the social networking space

Nokia, with the support of the South African presidency, led a project team, including several government and private sector partners, to conceptualise MoMaths, a pilot project which tested and measured the efficacy of using mobile technologies to support learning of Grade 10 mathematics in different South African schools from various regions. The math content was aligned with the country's national math curriculum and is approved by South Africa's Department of Education (DOE) and was freely available to participating learners and to teachers having received appropriate training. More than 10 000 math exercises covering all aspects of the math syllabus were available to learners and teachers.

Impact

At the end of the first phase (2006), the project had expanded to reach 4,000 learners, 72 teachers and 30 schools in 3 provinces of South Africa. Two years into the second phase (end of 2011), the project had reached 25,000 learners, 500 teachers and 172 schools in 4 different provinces of South Africa. An evaluation of the project in 2010 revealed a 14% increase in mathematics competency, with 82% of learners using the MoMath application outside of school hours, during holidays and weekends.

Challenge addressed

The Mobile Learning for Maths project was conceptualized as a result of a request from the South African presidency. Indeed, it requested a project exploring the use of mobile technologies to support formal education in South Africa, as little was known about mobile penetration at schools, and amongst South African youth in different kinds of South African schools. The research highlighted the inequalities still prevalent in South African schools, showing that there is clearly no single model or "one size fits all" approach for supporting access to mobile devices

Theme: Education
Timeframe: First phase: 2006; Second phase: 2010
More information: https://www.un.org/en/ecosoc/innovfair2011/docs/nokia.pdf

EMPACT

Connecting refugees to their future of digital work

EMPACT provides digital skills to refugees through a tailored, focused vocational training programme, and partners with leading tech firms to connect trainees with online work opportunities.

Data sets: N/A

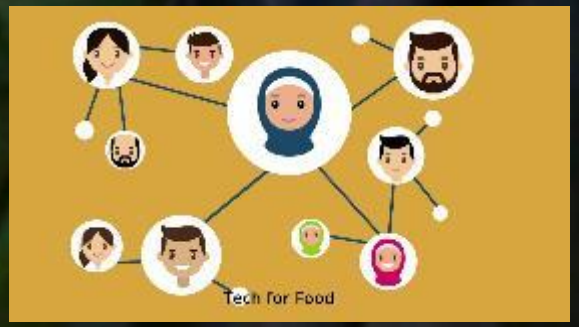
Platform used: N/A

Link to website/GitHub: N/A

Link: https://innovation.wfp.org/project/empact

Team member: Elisa Molena

Contact details: elisa.molena@wfp.org



ID 45 Empact
Iraq, Lebanon

Iraq, Lebanon

EMPACT - Connecting refugees to their future of digital work

EMPACT provides digital skills to refugees through a tailored, focused vocational training programme, and partners with leading tech firms to connect trainees with online work opportunities. Participants in the programme can learn everything from navigating the Web and annotating images, to dedicated software training in programs like Microsoft Office and Adobe Photoshop. A basic, six-week course covers fundamental IT skills. This is followed by advanced training, apprenticeships, and critically online work. In June 2020, EMPACT was selected by the No Lost Generation Tech Summit in Jordan as an innovative solution for enhancing employment opportunities, through the development of digital and English language skills.

Impact

Since 2016, the EMPACT programme has trained 13,655 students across twelve campuses in Lebanon and Iraq; 65% of participants are female. In Iraq, almost 20% of students generated an income through online work and 33% of alumni were employed 4 months after graduating. Nearly one third of graduates were able to immediately connect to online, freelancing, work opportunities and make a monthly average income of US$ 135.

Challenge addressed

The two primary drivers of displacement for most refugees are a lack of safety, and the loss of livelihood opportunities. In fact, without an income, food becomes scarce, and families are forced to leave home. The problem is that 85% of refugees are hosted by developing countries who are grappling with their own socio-economic challenges and struggling employment rates. The chances for these refugees ever becoming financially self-reliant in these developing countries are very low, leading to a continuous dependency on international aid.

Theme: Education
Timeframe: 2016 – Present
More information: https://innovation.wfp.org/project/empact

eSchools

Creating digitally-mature schools for the 21st century

The eSchools programme is meant to enhance students' knowledge of and access to computers and prepare them for the realities of the future of the labour market.

Data sets: N/A

Platform used: N/A

Link to website/GitHub: N/A

Link: https://www.e-skole.hr/

Team member: Hrvoje Puljiz

Contact details: ured@arnet.hr

ID 46 eSchools Croatia

Croatia

eSchools – Creating digitally-mature schools for the 21st century

The goal of the eSchools programme is to contribute to strengthening the capacities of primary and secondary education systems in order to prepare students for the labour market, further education, and lifelong learning. At the time of its creation, it was the only ICT programme in Croatia, and it enhanced students' knowledge of and access to computers for many years, thanks to all the trainings that the students as well as the teachers had received. In addition, the e-Schools programme was part of a larger shift in Croatia's public administration that seek to increase the efficiency and accountability of governing institutions

Impact

The first pilot of the programme was conducted in 2015 which resulted in an increase in the level of digital maturity for 10% of Croatian primary and secondary schools. In September 2018, based on the experience and results gained through the pilot project, the second phase of the programme, worth 1.3 billion kuna, was launched. Following a decision by the Ministry of Science and Education, the teaching and operation processes in all state-financed Croatian schools will be digitally transformed by December 31, 2022.

Challenge addressed

Successful informatisation should be understood as a long-term strategic vision of the educational system. It includes further ICT-supported development of curricula and of teaching and learning modes, as well as the professional training of teachers and school management personnel.

Theme: Education
Timeframe: 2015 – Present
More information: https://www.e-skole.hr/

Young1ove

Increasing student learning through a phone-based programme during COVID-19

During the COVID-19 pandemic, which entailed schools' closures, researchers were able to rapidly provide education to students through two low technology interventions: SMS text messages and direct phone calls.

Data sets: N/A

Platform used: Cell phone features that deliver one-way SMS messages from teachers to students

Link to website/GitHub: N/A

Link: Initiative webpage

Team member: Noam Angrist

Contact details: nangrist@young1ove.org

ID 72 Young1ove Botswana

Botswana

Young1ove – Increasing student learning through a phone-based programme during COVID-19

in Botswana, researchers were able to rapidly provide education during the COVID-19 pandemic through two low technology interventions: SMS text messages and direct phone calls. They conducted a rapid trial in Botswana to inform real-time policy responses, collecting data in multiple waves and found that phone calls and SMS messages resulted in cost-effective learning gains and that targeted instruction can be more effective than non-targeted instruction, especially for SMS messages which have no effect on their own if they are not targeted. Replication trials have been launched in Nepal, Kenya, and India to test the interventions in different contexts.

Impact

After the first four weeks, students in households that received weekly text messages with math problems showed a 13% improvement on learning outcomes. Meanwhile, students who received additional support through phone calls experienced a 24% increase in their learning outcomes. This translates into a reduction in innumeracy of 34% among the SMS-only group, and 52% for the SMS + phone calls group (only 19 and 14% of students were innumerate in the two groups after the evaluation, respectively, compared to 29% in the comparison group, who did not receive any phone type support). With the World Bank and other partners, we have launched replication trials in Nepal, Kenya, and India to test the interventions in different contexts.

Challenge addressed

School closures—due to teacher strikes, natural disasters, and more recently due to COVID-19—can result in large learning losses for students. In these situations, low-income families face additional challenges, such as lack of internet access, raising the need for low-technology, inexpensive solutions to support children's learning. The COVID-19 pandemic closed schools at one point for over 1.6 billion children, with potentially long-term consequences.

Theme: Education
Timeframe: 2020 – Present
More information: https://www.povertyactionlab.org/evaluation/increasing-student-learning-through-phone-based-program-during-covid-19-botswana

Livox

Using artificial intelligence to help people with disabilities speak

Livox is an alternative communication software that uses Machine Learning and Natural Language Processing to empower non-verbal people with disabilities and learning impairments and give them a voice to communicate and to learn.

Data sets: Public NLP datasets and some internally produced ones

Platform used: Android, Django, Python, Javascript, NodeJS

Link to website/GitHub: N/A

Link: hJps://livox.com.br/en/

Team member: Carlos Pereira

Contact details: carlos@livox.com.br

ID 73 Livox
11 countries

11 countries (Bahrain, Brazil, Egypt, Jordan, Morocco, Peru, Portugal, Saudi Arabia, United Kingdom, United States)

Livox – Using artificial intelligence to help people with disabilities speak

Livox uses Machine Learning and Natural Language Processing to understand context and propose possible interactions for the disabled person. The algorithms adjust according to a given disability. The more one uses Livox, the smarter it gets, altering its interface and tailoring response choices according to each category score.
In 2018, Livox was a finalist in MIT's Solve Challenge Finals, a live pitch event that gives inventors and researchers an opportunity to present their best ways of tackling large-scale global challenges. Livox was also a category winner in the 2019 Create the Future Design Contest, presented by Tech Briefs Media Group.

Impact

Livox is already being used by 25,000 people with disabilities, scattered in 11 countries. The software is available in more than 25 languages. Livox was also featured on Google I / O 2015 as an example of accessibility app.

Challenge addressed

Non-verbal people with disabilities often rely upon devices like grid pads to communicate. The tablet technologies display dozens of words and phrases, accompanied by pictures and preset categories, so users can form sentences.

Carlos Pereira, the founder of Livox, thought this approach could be overwhelming for some users and found a way to use machine learning to ease the communication process with Livox which offers a more personalized and focused set of responses.

Theme: Education
Timeframe: 2011 – Present
More information: http://www.livox.com.br/en/

Women Techsters

Bridging the digital and technology knowledge divide between men and women

Women Techsters, an initiative of Tech4Dev, aims to bridge the digital and technology knowledge divide between men and women in the technology ecosystem and ensure equal access to all opportunities.

Data sets: Beneficiary data, performance data, analytical data and numerical data

Platform used: Microsoft Teams and Moodle LMS

Link to website/GitHub: N/A

Link: https://womentechsters.org/

Team member: Oladiwura Oladepo

Contact details: diwura.oladepo@tech4dev.com

ID 74 Women Techsters Nigeria

Nigeria

Women Techsters – Bridging the digital and technology knowledge divide between men and women

The Women Techsters programme is an offshoot of the Nigerian Women Techsters (NWT), which is funded by Microsoft, and is aimed at building digital literacy especially coding and analytical skills in young women in Nigeria. The goal of Women Techsters os to empower African women to establish start-ups or technology-enabled businesses to build an entrepreneurial mindset in them; to support women to become digitally enabled, social champions, and owners of businesses; to bridge the digital divide between men and women in the tech space while contributing to economic growth and to ultimately improve the socio-economy of the Africa continent by providing skills that will elevate women from poverty.

Impact

Women Techsters will train 5 million African women over the next 10 years (2030) through series of activities holding simultaneously across the continent. The activities will include Open Days, Masterclasses, Bootcamps, and a Fellowship. The goal of the initiative is to create "an army" of smart women coders across Africa who will build technology start-ups and technology-enabled businesses that will promote the economic development of the African continent.

They are currently running the pilot cohort with the Nigerian-German Centre for Jobs, Migration, and Re-integration in Lagos, Nigeria and have trained over 50 women for the pilot cohorts.

Challenge addressed

The African ICT sector has too little women involved: 87% of women have no ICT skills whatsoever. This is partly caused by the fact that many Africans lack the adequate digital skills as well as simply internet access at home.

Theme: Education
Timeframe: 2021 – Present
More information: https://womentechsters.org/about.html

Recode

Supporting youth on acquiring digital skills and socio-emotional competences

Recode/CDI International transforms existing educational spaces – schools, community centers, libraries – into Digital Empowerment Centers for teachers, social educators and young people, strengthening and building skills such as leadership, entrepreneurship ability, digital and analytical skills, and creativity.

Data sets: N/A

Platform used: Moodle for virtual learning and Microsoft Power BI for business intelligence

Link to website/GitHub: N/A

Link: https://recode.org.br

Team member: Rodrigo Baggio

Contact details: rodrigo@cdiglobal.org

RECODE
Empoderamento Digital

ID 77 Recode
Brazil, Chile, Colombia, Venezuela

Brazil, Chile, Colombia, Venezuela

Recode – Supporting youth on acquiring digital skills and socio-emotional competences

Recode (formerly Center for Digital Inclusion) is a social impact organisation committed to digital empowerment that aims to prepare independent, aware, and connected young people to reprogram the systems to which they belong using technology. Through digital empowerment, Recode broadens the horizon of opportunities for young people in situations of social vulnerability. Recode partners with community centers, libraries, and government schools to train in its methodology. As a network of educators, teachers, and librarians, Recode raise awareness and generates opportunities for youth.

Impact

Founded 26 years ago, Recode is present in South America with more than 1,000 digital empowerment centers and has reached more than 1.8 million people. In 2019, Recode impacted 52,000 people, of which 55% were women, and built capacity through 1,158 digital empowerment centers including libraries, schools and community-based organizations. Recode also launched a new social business, Recode Pro, that trains low-income youth for entry-level jobs in tech, such as full stack developer, with salaries on average five times higher than their previous jobs. In this format, employers pay a recruitment fee to hire students. The first cohort of 100 students had a positive response from employers that have already pre-booked some students.

Challenge addressed

Half of the young people aged 15-29 (25 million people) in Brazil are currently economically disconnected in a world that continues to evolve with new technologies. Inequality of access to new technologies in Latin America keeps low-income communities disadvantaged in the realms of both marketable job skills and as beneficiaries of technological innovation, especially as STEM skills become increasingly valued in the workplace.

Theme: Education
Timeframe: 1995 – Present
More information: https://recode.org.br/

Chief Science Officers

Providing students with skills in science, technology, engineering and mathematics

The Chief Science Officer (CSO) program seeks to amplify student voice and create a global network of diverse STEM leaders by placing them in conversations regarding current innovations.

Data sets: N/A

Platform used: Google Suite for Education

Link to website/GitHub: N/A

Link: https://chiefscienceofficers.org/

Team member: Jacob Lounsbury

Contact details: JLounsbury@SciTechInstitute.org

ID 78 Chief Science Officers
United States of America

USA

Chief Science Officers – Providing students with skills in science, technology, engineering and mathematics

The Chief Science Officers (CSO) programme seeks to amplify student voice and create a global network of diverse STEM leaders by placing them in conversations regarding current innovations. During the school year, CSOs are expected to create an Action Plan and collaborate with peers, mentors and professionals to complete their project. CSOs work together across country and state lines as part of an online learning community and collaborate through discussions, blogs and assignments. They also attend annual Leadership Training Institutes, Cabinet Meetings, STEM events and meet ups in the community.

Impact

As the startup start of the programme (in 2015), Arizona trained over 300 CSOs. In recent years, additional 300 CSOs programmes in Oregon, Michigan, Texas, Florida, Georgia, New York, Pennsylvania, and Delaware have been deployed. The programme is slowly expanding outside of the USA; indeed, in Kuwait, over 75 CSOs have also been trained, and Sonora and Guanajuato of Mexico have also trained over 275 CSOs while over 50 students in Nairobi, Kenya have completed the required training. New cabinets are preparing to join the programme, including New Jersey, Louisiana, Iowa, California, South Carolina as well as additional states in Mexico. Lastly, the elected CSOs range from all background and ethnicity categories, and over 60% of them are female.

Challenge addressed

The CSO programme was created with the goal of amplifying student voice and creating a global network of diverse STEM leaders by placing them in conversations regarding current innovations.

Theme: Education
Timeframe: 2015 – Present
More information: https://chiefscienceofficers.org

ReBootKamp (RBK)

An immersive bootcamp that aims to help refugees to find work

ReBootKamp is a coding bootcamp focused on producing self-contained software developers ready for any job in the technology industry.

Data sets: N/A

Platform used: CodingSystem (Customised platform)

Link to website/GitHub: https://github.com/RBK-RebootKamp-Tunisia

Link: https://www.rebootkamp.net

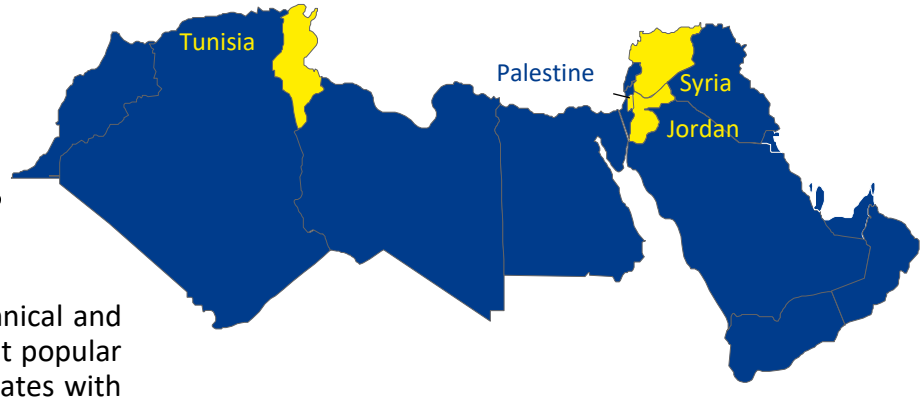
Team member: Lotfi Darragi

Contact details: Lotfi.darragi@rbk.tn

ID 30 ReBootKamp
Jordan, Tunisia, Palestine, Syria

Jordan, Tunisia, Palestine, Syria

ReBootKamp – An immersive bootcamp that aims to help refugees to find work



ReBootKamp (RBK) prepares youth for working in the big industries by providing them with high-demand technical and soft skill trainings. Although RBK offers several programs, its full stack software engineering program is the most popular and uses the well-known Hack Reactor curriculum. At the end of the training road, a career fair matches graduates with several of RBK's 100+ regional hiring partners. RBK uses eXtreme Learning approach that combines several traditional methodologies and soft skill training. RBK is the first immersive bootcamp in the and the first refugee career accelerator in a conflict zone.

Impact

Currently RBK supported around 120 high quality, market-ready graduates per lab per year throughout the four campuses (Syria, Jordan, Palestine and Tunisia which means that more than 500 youth have already graduated from the programme and found a job. In addition, Graduates are being hired at 802 JD (Jordanian dinar) per month on average ($1,360) – 2 times more than university graduates. Placement rate is at 98% within 6 months of completion of the program, compared to university rates of <10%.

Challenge addressed

Syria's and Palestine's generation of young people in refugee camps has very limited access to higher education or vocational training, and restrictions in the host countries hinder their ability to work. Jordan and Tunisia are two of the countries with the highest unemployment rates, especially among young people but have huge potential to further educate the youth and accelerate growth and positive change in their respective countries.

Theme: Education
Timeframe: 2015 – Present
More information: https://www.rebootkamp.net

Inclusive Digital Connectivity

The selected cases under the **Inclusive Digital Connectivity** sector aim at addressing the following challenges.

01

Providing connectivity to rural areas (*Digital availability*)

ID 54 – Zenzeleni

02

Accessing the internet more easily (*Digital affordability*)

ID 71 – KNOWS Networking Over White Spaces

03

Relevant digital services (*e-Content relevance*)

ID 55 – X-Road

04

Readiness to exploit the digital world (*Digital readiness*)

ID 75 – InstaDeep

X-Road (e-Estonia)

Estonia: the most advanced digital society in the world

X-Road is an Estonian government service and a key building block of an IT architecture, enabling many public services to deliver online their services. Its software-based solution X-tee is the backbone of e-Estonia as it allows the nation's various public and private sector e-service information systems to link up and function in harmony.

Data sets: X-tee (data exchange layer), then the data sets being exchanged over X-tee depend on the services provided

Platform used: X-Road software

Link to website/GitHub: https://github.com/nordic-institute/X-Road

Link: https://www.x-tee.ee/factsheets/EE/

Team member: Joonas Heiter

Contact details: Joonas.Heiter@ria.ee

ID 55 X-Road (e-Estonia)
Estonia

Estonia

X-Road – Estonia: the most advanced digital society in the world

X-Road is a partially open-source solution (since 2016). It is a government service, a key building block of an IT architecture, enabling many public services to deliver online their services. X-Road® software-based solution X-tee is the backbone of e-Estonia. Invisible yet crucial, it allows the nation's various public and private sector e-service information systems to link up and function in harmony. To ensure secure transfers, all outgoing data is digitally signed and encrypted, and all incoming data is authenticated and logged. e-Estonia is a formidable success story that grew out of the partnership between a forward-thinking government, a proactive ICT sector, and a switched-on, tech-savvy population. Estonia has shared its e-governance journey with 60 governments and exported its solutions to over 130 countries around the world. X-Road is implemented in Finland, Kyrgyzstan, Faroe Islands, Iceland, Japan and other countries.

Impact

99% of state services are made online in Estonia and 52,000 organisations are indirect users of the X-Road services. Almost everything is done digitally in Estonia, from filing taxes to paying for parking. In school, child attendance, homework and grades are all available online. 95% of citizens file their taxes online through the eTax electronic tax filing system. e-Estonia with X-Road is making the government more efficient and transparent as well as boosting economic growth and increasing the overall wellbeing of the people of Estonia.

Challenge addressed

When Estonia started building its information society about two decades ago, there was no digital data being collected about its citizens. The general population did not have internet access or even devices with which to use it. But by 1997, 97% of Estonia's schools were digitized.

Theme: Inclusive digital connectivity
Timeframe: 1996 - Ongoing
More information: https://e-estonia.com/solutions/interoperability-services/x-road/

Microsoft Networking Over White Spaces (KNOWS)

Providing low-cost wireless connectivity in remote rural areas

Existing technology and infrastructure (UHF TV frequencies) is being exploited to cover long distances and reach disadvantaged or rural areas in the world. In South Africa, a pilot project in rural Limpopo delivered high-speed and affordable broadband to underserved communities using TV white spaces technology providing low-cost wireless broadband access to five secondary schools in underserved parts of the Limpopo province.

Data sets: N/A

Platform used: N/A

Link to website/GitHub: N/A

Link: www.microsoft.com/en-us/research/project/dynamic-spectrum-and-tv-white-spaces/

Team member: Sidney Roberts

Contact details: siro@microsoft.com

ID 71 KNOWS
Botswana, Ghana, Namibia, South Africa, Tanzania, Kenya

Botswana, Ghana, Namibia, South Africa, Tanzania, Kenya

KNOWS – Providing low-cost wireless connectivity in remote rural areas

Existing technology and infrastructure (UHF TV frequencies) is being exploited to cover long distances and reach disadvantaged or rural areas in the world. Wireless technologies and management techniques exist today that can replace artificial spectrum scarcity with naturally occurring spectrum abundance. TV band white spaces are gaps left between broadcast channels which occur in different places on different channels. These TV white spaces could be used for cellular offloading, rural broadband/backhaul, wide-coverage hotspots, bridge among small networks, sensor network, wireless surveillance system. In a typical home, a Wi-Fi signal can penetrate up to two walls. At the same power, a TV white spaces signal can penetrate more walls and obstacles, enabling whole home media distribution. This would simplify and enrich in-home / in-building networking opportunities.

Impact

In South Africa, a pilot project in rural Limpopo delivered high-speed and affordable broadband to underserved communities using TV white spaces technology providing low-cost wireless broadband access to five secondary schools in underserved parts of the Limpopo province. In Botswana, the project Kgolagano used TV white spaces (TVWS) to provide internet connectivity and telemedicine services to local hospitals and clinics, enabling access to specialized medicine in Gaborone.

Challenge addressed

Broadband access remains unavailable and/or unaffordable for several billion people around the world. Fixed broadband access is unaffordable for 3.9 billion people spread across every country in the world. Mobile broadband is unaffordable for over 2.6 billion people. Availability and affordability gaps are disproportionately impacting people in Africa, Asia, and Latin America.

Theme: Inclusive digital connectivity
Timeframe: 2008 - Present
More information: https://www.microsoft.com/en-us/research/project/dynamic-spectrum-and-tv-white-spaces/

InstaDeep

Delivering AI-powered decision-making systems for enterprises

InstaDeep, a Tunisian-born innovator, is an emerging AI powerhouse. It uses advanced Deep Reinforcement Learning and optimisation techniques to solve some of the world's most complicated problems. InstaDeep has helped clients unlock challenges such as developing advanced therapeutics, optimising train routes, among others.

Data sets: N/A

Platform used: DeepChain, which offers an open-source platform to develop advanced machine learning tools

Link to website/GitHub: https://github.com/DeepChainBio/deep-chain-app

Link: www.deepchain.bio

Team member: Karim Beguir and Zohra Slim

Contact details: kb@instadeep.com and z@instadeep.com

InstaDeep™

ID 75 InstaDeep
Worldwide

Worldwide

InstaDeep – Delivering AI-powered decision-making systems for enterprises

InstaDeep uses advanced Deep Reinforcement Learning and optimisation techniques to solve some of the world's most complicated problems. InstaDeep has helped clients unlock challenges such as developing advanced therapeutics, optimising train routes, conducting rapid scientific computations to map 3D geological data and designing printed circuit boards. It applies unrivaled expertise in AI and deep tech to complex issues for global names like BioNTech, Deutsche Bahn, and Total. InstaDeep was selected by CB Insights as one of the 100 most promising AI start-ups in the world. It also developed collaborations with global leaders in the Artificial intelligence ecosystem, such as Google DeepMind, Nvidia and Intel. The company is part of Intel's AI Builders program and was named a Preferred Deep Learning Partner by NVIDIA.

Impact

InstaDeep and BioNTech formed a joint AI Innovation Lab to advance a portfolio of initiatives across drug discovery and design, protein engineering, manufacturing and supply chain optimization. The AI Innovation Lab will combine InstaDeep's advanced capabilities in the areas of AI, machine learning and digitalisation along with BioNTech's deep domain expertise in precision immunotherapies. One of the lab's key research areas will be the development of next generation vaccines and biopharmaceuticals for the treatment of cancer and prevention and therapy of infectious diseases, including COVID-19.

Challenge addressed

The idea with InstaDeep is to prove that Tunisians are capable of creating cutting-edge technologies in the field of AI. Currently, the objective is to become the African leader in AI. The ambition is to develop African talent and to foster Tunisia's competitiveness on a global level.

Theme: Inclusive digital connectivity
Timeframe: 2014 - Present
More information: https://www.instadeep.com/

Zenzeleni

South Africa's first and only Internet Service Provider run by a rural cooperative

Zenzeleni is a community owned wireless internet service provider based in rural South Africa.

Data sets: Backbone and CPE delivery: 2.5 / 5 Ghz (unlicensed frequency), Fiber capacity to burst 1 Gig, Wireless can carry max capacity 300 Mpbs , Uncontended (1:1), (bandwidth dynamically allocated across network). Standardised equipment: Mikrotik/ Ubiquity. Services speeds (as required), Minimum 2/4 Mbps – 10/ 10Mbps.

Platform used: N/A

Link to website/GitHub: N/A

Link: https://zenzeleni.net/our-model/

Team member: Sol Luca de Tena

Contact details: sol@zenzeleni.net

ID 54 Zenzeleni South Africa

South Africa

Zenzeleni – South Africa's first and only Internet Service Provider run by a rural cooperative

Zenzeleni is South Africa's first and only Internet Service Provider (ISP) that's owned and run by a rural cooperative. Just like any ISP, Zenzeleni installs and maintains telecommunications infrastructure and also sells telecommunications services like voice and data. Yet what's special about the project is that it involves a registered not-for-profit company which works with cooperatives in the community to deliver affordable voice and data services. Crucially, the project also keeps money in communities like Mankosi, often beset by high rates of unemployment.

Impact

Zenzeleni's voice calls and data costs are much cheaper than what is offered by the commercial mobile operators (e.g., voice calls can cost 20c a minute rather than the standard R1.50). The solar powered stations also charge cell phone batteries less than what's usually charged by spaza shops or shebeens. Those shops also tend to be some distance from the village, so people save time as well as money. Since March 2014, the project has earned around R33,600 (about USD$2422.16).

Challenge addressed

Mankosi is a remote rural community in South Africa's Eastern Cape province. It is home to almost 6,000 people. The nearest city is Mthatha, about 60 kilometres away. Most homes are not connected to the electricity grid; residents charge their cellphones at a local shop or shebeen, for which they must pay. Both data and airtime for those phones also cost a lot: a survey shows that people spend up to 22% of their income on telecommunications. This is money that could be spent on food, education, transport and other needs.

Theme: Inclusive digital connectivity
Timeframe: 2012 – Present
More information: https://zenzeleni.net/

Annex - Vetting process

For assessing and selecting the cases that were prioritized to be included in the "Playbook on Harnessing Tech for Inclusive Growth and Jobs" the following steps were concluded:

- **Step 1 - Ensure that the case is genuine: this is done by getting multiple independent reputable sources telling very similar stories about the case.**
- **Step 2 - Ensure that the case documentation is truthful: done by getting contradictory analysis from other sources. Of course, contradictory sources must be reputable (this was already checked).**
- **Step 3 - Ensure the relevance of the case in the Playbook.**
- **Step 4 - Ensure that the selected initiative is compliant to EU values as defined by the Lisbon Treaty (respect for human dignity and human rights, freedom, democracy, equality and the rule of law).**
- **Step 5 - Ensure that the promoted stories are aligned with EU objectives.**

Disclaimer: The presented cases in this document and the associated database do not claim exhaustivity, nor paternity of those cases. Nor does it represent the view of the European Commission. It only aims to shred light on relevant digital initiatives worldwide. Some illustrative images are royalty-free images from publicly available images databases such as Unsplash.


European
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