



# Message from our Co-Founders

For WeRobotics and Flying Labs, 2019 was the busiest year yet. Together, we carried out 56 trainings and 52 projects across 26 countries. We worked on cargo drone projects with Dominican Republic, Nepal, Fiji, Papua New Guinea, and Cameroon Flying Labs. We held our first-ever Flying Labs Retreat, convening Flying Labs from 11 countries to learn from each other and strategize for the coming year, and launched the Drone Charter in Inclusion and Equal Opportunity.

We also organized our second WeRobotics Global Conference in March, hosted at The Rockefeller Foundation. The conference once again brought Flying Labs together with leading experts across multiple sectors and technologies to catalyze information sharing and new partnerships.

Over the summer, we launched the Unusual Solutions Competition to support local experts by creating an enabling environment for them to scale their positive social impact. The Competition received 245 solutions from 54 countries.

To improve our reporting, we revamped our finance and accounting processes, along with our monitoring and evaluation strategy. These updates enabled us to pass an independent, donor-required financial review successfully and to create a dedicated public-facing impact page with all our updated impact metrics ([WeRobotics.org/Impact](https://werobotics.org/Impact)) to inform our strategy continuously. We also created our first organizational videos along with several other thematic videos after launching 'The Power of Local' as our new tagline.

We consolidated our Board of Directors' strategy and added a significant number of new donors such as Omidyar Network, the Bill & Melinda Gates Foundation, and the Jansen PrimeSteps Foundation.

In 2020, our main priorities will focus on the data-value chain, closing feedback loops, increasing the quality of Flying Labs, growing the number of technology partnerships, and further diversifying revenue streams. We will continue to meet the growing demand for Flying Labs while enabling them to scale their impact through the provision of new, high-quality services. By bringing on select new technology partners, for example, Flying Labs can offer new use-cases for the application of robotics. This will enable labs to become more sustainable as they further diversify their activities.

## 2019 At a Glance

**53%**

growth in the Flying  
Labs Network

**1,343**

professionals trained by  
WeRobotics & Flying Labs

**33**

conferences & events  
organized by WeRobotics  
& Flying Labs

# What's Inside

Flying Labs.....	3
Sector Programs.....	9
Enabling Environments.....	17
Knowledge Sharing.....	22
Organizational Achievements.....	27
Team & Partners.....	33
2020 Outlook.....	36



## **The Power of Local**

We co-create and facilitate a network of local knowledge hubs in Africa, Asia, Latin America and Oceania to build on existing expertise in drones, data, and AI, the “Flying Labs” network. The goal of Flying Labs is to accelerate the positive impact of local aid, health, development, and environmental solutions locally. Flying Labs also expand local markets by creating new jobs and businesses that offer robotics as a service and support local ecosystems.



# Highlights from Flying Labs

2019 has been a busy year with and in Flying Labs. 9 new labs joined the network, bringing together 128 members and 150 partners in 26 Flying Labs on 4 continents. Together, the Flying Labs trained close to 500 participants, implemented over 50 projects and engaged with 3,700+ stakeholders. WeRobotics transferred 66 opportunities to Flying Labs, and supported 15 Flying Labs members to become officially certified drone pilots. And our updated M&E framework allows to capture the full impact of our activities.

## 9 New Flying Labs Launched



Senegal, Jamaica, Burkina Faso, Papua New Guinea, Sierra Leone, Zambia, Spain, Nigeria South West Hub, and Ghana joined the Flying Labs Network.

## Framework Updates & Key Metrics



Thanks to feedback from new and existing Flying Labs, we refined and improved the Flying Labs framework quarterly. Our key impact metrics are now available at:

[WeRobotics.org/impact](https://werobotics.org/impact).





One of the most important success stories of 2019 was the number of Flying Labs pilots becoming certified with official drone pilot licenses. In total, 15 drone pilots in 3 countries (South Pacific, Senegal, Tanzania) completed the certification requirements in 2019. This formal certification is instrumental in enabling greater inclusion and equal opportunity in the use of emerging technologies for social good. To be sure, local pilots are often at a severe disadvantage when they don't have formal qualifications. International organizations and companies increasingly require official licenses for projects, which means new project opportunities typically go to foreign drone pilots instead, since it is far easier and less expensive for them to get drone pilot licenses.

This explains why WeRobotics has also worked with Senegal and Tanzania Flying Labs to enable them to serve as official certifiers for drone certification training. This means that African experts can now train other African experts interested in drone certification training in Africa rather than Europe or elsewhere.



# Capacity & Skills Building

Building the capacity of local experts through Flying Labs and expanding their skill sets is central to WeRobotics' mission.

In 2019, these core trainings focused on certification and training on Data / AI. The latter is enabling Flying Labs to move up the data value chain by offering data analysis / AI trainings and services in addition to data collection and processing. This allows Flying Labs to support local stakeholders and actors in their decision process.



## Certification & Training



A total of 3 certification trainings were organized in Tanzania, Senegal, and Fiji. Thanks to these professional trainings, 10 African and 5 South Pacific Flying Labs members acquired their official drone pilot licenses.

## Train the Trainer



A total of 2 in-depth “Train the Trainer” drone and data analysis courses were organised at two Regional Flying Labs (Senegal and Panama). Participants included members of Flying Labs from Panama, Senegal, Benin, Cameroon, Côte d'Ivoire and Sierra Leone, as well as local stakeholders.

# Flying Labs-Led Trainings

Flying Labs are increasingly training each other and partners in their own countries and regions. We expect the number of Flying Labs trainings to increase as they deepen their experience and gain new skills. The localization of trainings is naturally a key priority for WeRobotics. As such, we expect the number of WeRobotics led trainings to decrease in the coming years since more Flying Labs will have the opportunity to run these trainings themselves.

## Sector-Specific Trainings

WeRobotics co-organized several sector-specific trainings with Flying Labs throughout 2019. In February, WeRobotics and Flying Labs from Papua New Guinea, India, and Fiji teamed up on a joint two-day cargo drone training for the Center for Disease Control and Prevention (CDC) in Port Moresby. This training formed the basis for the online training on medical cargo drones that launched shortly after that. WeRobotics also trained both DR and Nepal Flying Labs on how to use cargo drones for medical deliveries. Other trainings included a joint exercise on humanitarian drone missions with both Nepal and India Flying Labs towards the end of 2019.



## Data & AI Trainings



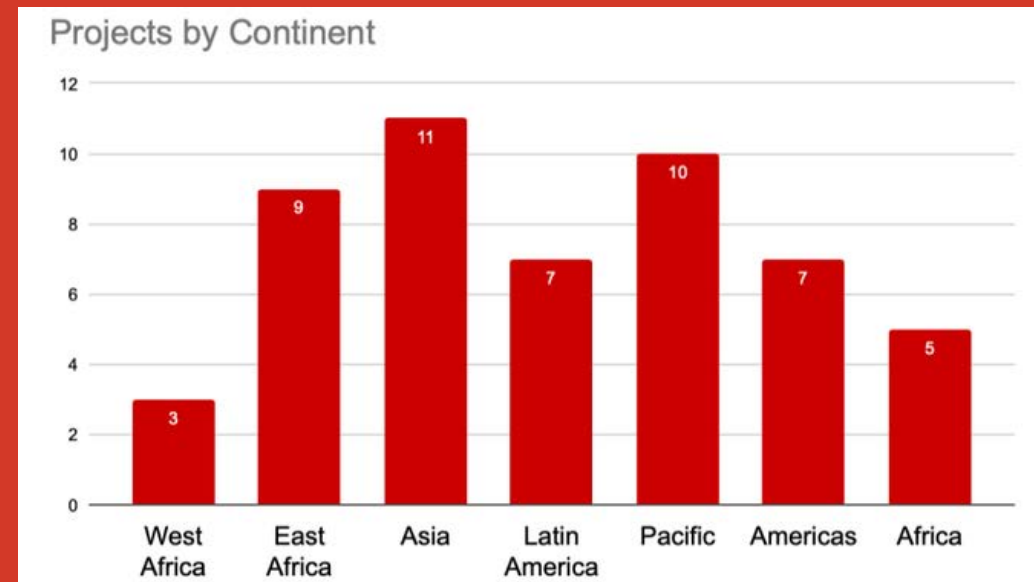
A total of 15 data and AI trainings were held in 2019 across the following 9 countries: Benin, Cameroon, India, Morocco, Nigeria, Nepal, Philippines, Tanzania, and Uganda. This enabled 203 participants to receive hands-on training on how to translate aerial data into actionable analytics.



WeRobotics and Flying Labs ran a total of 56 trainings and workshops and 52 projects across 26 countries in 2019. These and related activities were documented through the publication of 132 blog posts over the course of 12 months.

In terms of sector contributions, WeRobotics and Flying Labs engaged in 24 activities related to AidRobotics, i.e., the application of robotics in the humanitarian sector. This included 14 projects led by Flying Labs Chile, Nepal, Uganda, Philippines, South Pacific, Japan, Morocco, India, and the South Pacific. In addition, 8 hands-on trainings and workshops were organized, enabling 137 participants to gain hands-on knowledge on the use of drones in Disaster Risk Management.

WeRobotics and Flying Labs were also actively engaged in the HealthRobotics space in 2019, including eight cargo drone projects led by Flying Labs in Cameroon, Dominican Republic, Nepal, Papua New Guinea, Fiji, and Uganda. In addition, five hands-on training sessions were organized as well as one policy conference. Around 82 participants took the trainings.



On the environmental and EcoRobotics front, Flying Labs led 12 projects in Chile, Tanzania, Fiji, and Panama. In addition, EcoRobotics activities included three professional trainings, two workshops, and two conferences. Last but not least, DevRobotics. Flying Labs were actively involved in the development sector, running 18 projects in Benin, Burkina Faso, Côte d'Ivoire, Kenya, Fiji, Japan, India, Senegal, Jamaica, Spain, Philippines, and Tanzania. DevRobotics activities also included 37 trainings, nine workshops, ten youth programs, nine conferences and events, and four live demonstration. In total 1069 participants benefited from these trainings and workshops.

# We Robotics

## Sector Programs

Our sector-based programs channel our collective efforts to contribute to specific Sustainable Development Goals (SDGs). Through Sector Programs, Flying Labs implement locally-led solutions, coordination mechanisms and customized trainings for NGOs, government agencies, universities and institutions using robotics technologies. Focusing on humanitarian aid, sustainable development, public health and environmental issues including sustainable agriculture and fisheries, our programs address the specific needs of each sector and build learning and sharing platforms to accelerate actions.



# Program Tracks

WeRobotics doesn't assign projects to Flying Labs. Rather, Flying Labs identify key projects of interest in their country and regions and WeRobotics shares relevant opportunities with individual Flying Labs for their consideration. As such, projects are always demand-driven. To date, these projects have typically belonged to one (or more) of the following sectors: Development, Aid, Health and Environment. This explains why the sector programs at WeRobotics and Flying Labs are geared to these sectors.



## HealthRobotics

The public health program provides professional, hands-on training to Flying Labs and public health organizations. The program also provides Flying Labs and health organizations with direct, operational support for cargo drone deliveries and other applications of drones in public health. The common thread between trainings and projects is localization—exchanging knowledge, transferring technology, and creating opportunities for local experts to take on leadership positions in the use of robotics to improve public health outcomes.

The HealthRobotics Program was one of the busiest programs in 2019. Highlights include cargo drone projects with the Center for Disease Control (CDC) and Papua New Guinea Flying Labs, Pfizer, and Dominican Republic Flying Labs, Birat Nepal Medical Trust and Nepal Flying Labs, World Mosquito Program and South Pacific Flying Labs, Anti-Malaria Drones and Tanzania Flying Labs, and the launch of a cargo drone project with the Gates Foundation, World Health Organization, and Cameroon Flying Labs. Also, the HealthRobotics Program designed and launched a comprehensive, professional online training on the use of cargo drones for medical deliveries. Thus far, 38 participants from more than a dozen different countries have completed the course.

# AidRobotics

The humanitarian aid program at WeRobotics provides professional, hands-on training to Flying Labs and humanitarian organizations. The program also provides Flying Labs and aid organizations with direct operational support before, during and after humanitarian disasters.

The common thread between trainings and projects is localization, i.e., exchanging knowledge, transferring technology and creating opportunities for local experts to take on leadership positions in the use of robotics to improve humanitarian outcomes.



Highlights of the AidRobotics Program in 2019 include a week-long, hands-on training and live disaster simulation with Nepal Flying Labs for the World Food Program and 30+ disaster management stakeholders in Nepal. Another highlight was a related week-long, hands-on training for the State Disaster Management Authority of Nagaland, India, led by India Flying Labs and partners, including WeRobotics.



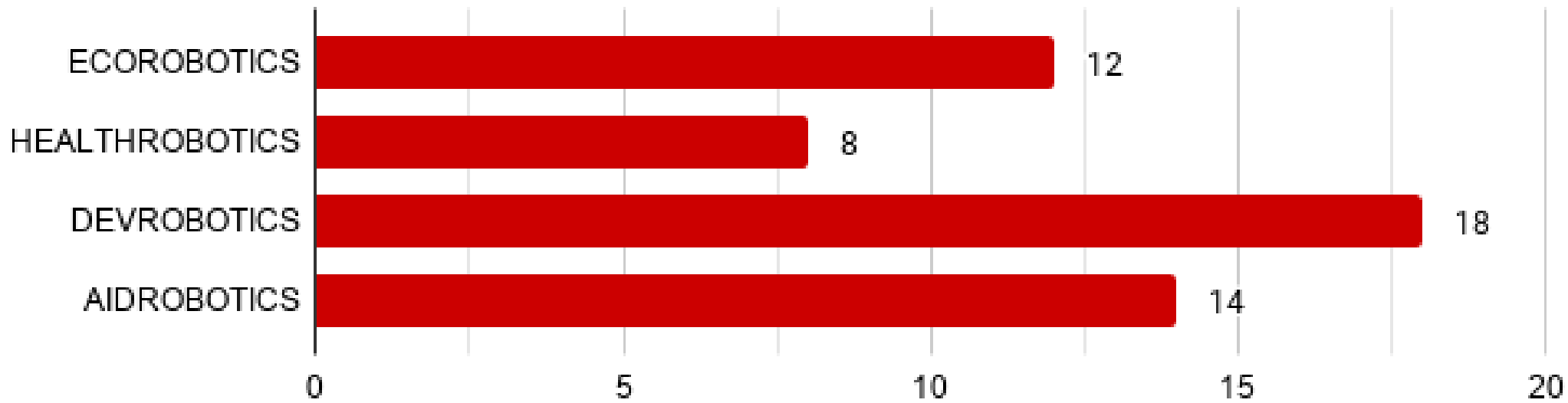
# EcoRobotics

The environment program provides professional, hands-on training to Flying Labs as well as conservation, environmental and agriculture organizations. The program also provides Flying Labs and relevant organizations with direct, operational support in the implementation of environmental/sustainable agriculture projects. The common thread between trainings and projects is localization, i.e., exchanging knowledge, transferring technology and creating opportunities for local experts to take on leadership positions in the use of robotics to improve environmental and agriculture outcomes.



EcoRobotics highlights in 2019 include the Co-Creation workshop on “Drones for Conservation” organized with Tanzania Flying Labs in September 2019 with over 20 leading government, research and not-for-profit organizations and the many conservation-related projects of Flying Labs supported by WeRobotics with technical and sector-specific expertise.

## Projects by Program Track



## DevRobotics

The sustainable development program includes 2 specific tracks: use of drones and data for development such as land planning, urban/WASH planning and resettlements as well as capacity building for entrepreneurship both within the Flying Labs network as well as with local organizations through a specific Entrepreneurship program.

DevRobotics highlights in 2019 include a number of financial/economic sustainability and Business Model workshops with select Flying Labs, first land management projects in Tanzania, Côte d'Ivoire and Benin and resettlement projects in Panama.



# Reducing the incidence of dengue in Fiji

The WeRobotics Engineering Team and South Pacific Flying Labs partnered with the World Mosquito Program (WMP) to reduce the incidence of dengue in Fiji. Dengue fever is ranked by the World Health Organisation (WHO) as the most significant mosquito-borne disease in the world. Globally, 40 percent of the world's population is at risk of dengue, with 390 million cases being reported every year (many go unreported). Governments are spending USD 8.9 Billion dollars each year on dengue reduction and risk mitigation projects. The global burden of dengue is placing significant pressure on public health officials and policymakers to seek innovative solutions like WMP's Wolbachia method.



Wolbachia is a harmless, naturally occurring bacteria, which, when carried by mosquitoes, prevents them from transmitting dengue. When enough mosquitoes in a given population carry Wolbachia, the transmission of dengue can be significantly reduced, even eliminated. The challenge is in the time and cost it takes to release Wolbachia mosquitoes by land, e.g., on the back of cars. Roads are not uniformly distributed, which prevents the uniform distribution of Wolbachia-carrying mosquitoes. Some roads are not accessible year-round due to floods and other events. What's more, not everyone lives next to a road.

WeRobotics has developed a drone-compatible mosquito release system and the software to carry out the aerial and autonomous release of Wolbachia mosquitoes. The mechanism can release some 200,000 Wolbachia mosquitoes per flight. WeRobotics and South Pacific Flying Labs have field-tested the mechanism with WMP in Fiji. Together, they safely released close to one million Wolbachia mosquitoes by drone over the course of 12 weeks and measured how Wolbachia spread into the existing mosquito population. The results are particularly promising: more than 80 percent of mosquitos were found to carry Wolbachia after the drone releases. We have thus proven that aerial mosquito release is a viable solution for the establishment of Wolbachia, which warrants further R&D and testing to move from prototype to an industry-grade solution.

# Monitoring Sea Level Rise in the Zapatilla Islands

North and South Zapatilla Islands are two uninhabited islands located within the Bastimentos Island National Marine Park in the province of Bocas del Toro, off the Panama coast. Spanning roughly 14 hectares and 34 hectares, respectively, both islands are unique ecosystems and are considered protected areas. The Naturaleza Foundation has periodically carried out monitoring missions on these islands as they are being affected by sea level rise. The monitoring process has been quite time-consuming, requiring regular sample-taking at various control points and comparing how much the sea level has risen over time. Because obtaining results between each stage with this process takes a long time, Panama Flying Labs proposed a more efficient method by using drones. The approach involves an initial ground survey, followed by regular aerial surveys to generate Digital Terrain Models for both islands.

By using high-resolution elevation data collected by drone, the flood risk can be precisely estimated over the entire island. Elevation data derived from satellite imagery are too coarse for the scale of these islands to provide any useful insights. In contrast, ground measurements are accurate but very sparse, so they fail to provide detailed coverage.



The initial aerial data were collected and processed in a matter of hours, demonstrating the cost-effectiveness of using drones for sea level monitoring. This data enabled Panama Flying Labs to create a flood risk model from the initial dataset. That risk model allows the team to simulate various sea-level rise scenarios and see their impact over the islands in the same resolution as the drone-collected data.

Armed with actionable insights, the Naturaleza Foundation has now the knowledge which targeted areas are best to plant mangrove trees in, to reduce the effect of sea-level rise on the islands' natural ecosystems.

Thanks to the ease of deployment and the marginal cost of operations, Panama Flying Labs will continue to monitor the Zapatilla Islands and further refine their risk model. At the same time, the Naturaleza Foundation will investigate mangrove reforestation as a natural sea-level barrier.

# Rapid diagnosis of TB in Rural Nepal

Rapid diagnosis of TB in rural Nepal. In Nepal, more than 80 percent of residents live in rural areas and 50 percent live in remote, mountainous regions with poor access to health-care. Around 70 percent of Nepalese are carriers of Mycobacterium Tuberculosis (TB) and many of them are suffering from active tuberculosis disease. In fact, TB is the fourth leading cause of death in Nepal, and countless rural cases of TB go undiagnosed because patients cannot access simple diagnostic tests and get free treatment provided by the government.



The Drone Optimized Treatment System (DrOTS) project aims to improve the accessibility of TB diagnostic tests by linking community health workers (CHWs) with state-of-the-art diagnostic tools via drone. WeRobotics and Nepal Flying Labs partnered with DrOTS to set up drone-assisted sputum sample collection from eight health posts in Pyuthan and Swargadwari municipalities. It takes at least four hours by road to reach these health facilities. In contrast, it takes drones less than 10 minutes. These cargo drone flights and deliveries have been entirely locally led by Nepali drone pilots and public health professionals. Together, they carried out over 106 flights from eight remote health facilities and delivered them directly to two regional hospitals for rapid testing over a 6 month-period. Thanks to this project, more than 20 cases of TB were positively diagnosed in record time, enabling patients to receive their TB therapy more quickly than ever before.



# We Robotics

## Enabling Environment

“It’s not about the Robots.” Only a small fraction of our work is about robots or drones themselves. The technology itself is at most 10 percent of the solution. We primarily focus on the other 90 percent by creating an enabling environment that allows local experts to leverage robotics to tackle critical problems sustainably and effectively.

# Competitions & Challenges

WeRobotics coordinates international competitions and challenges to crowdsource solutions that focus primarily on creating an enabling environment and that give local experts the opportunity to use robotics and data to better tackle key problems. WeRobotics launched 2 such competitions in 2019:

Unusual Solutions and the Open AI Challenge



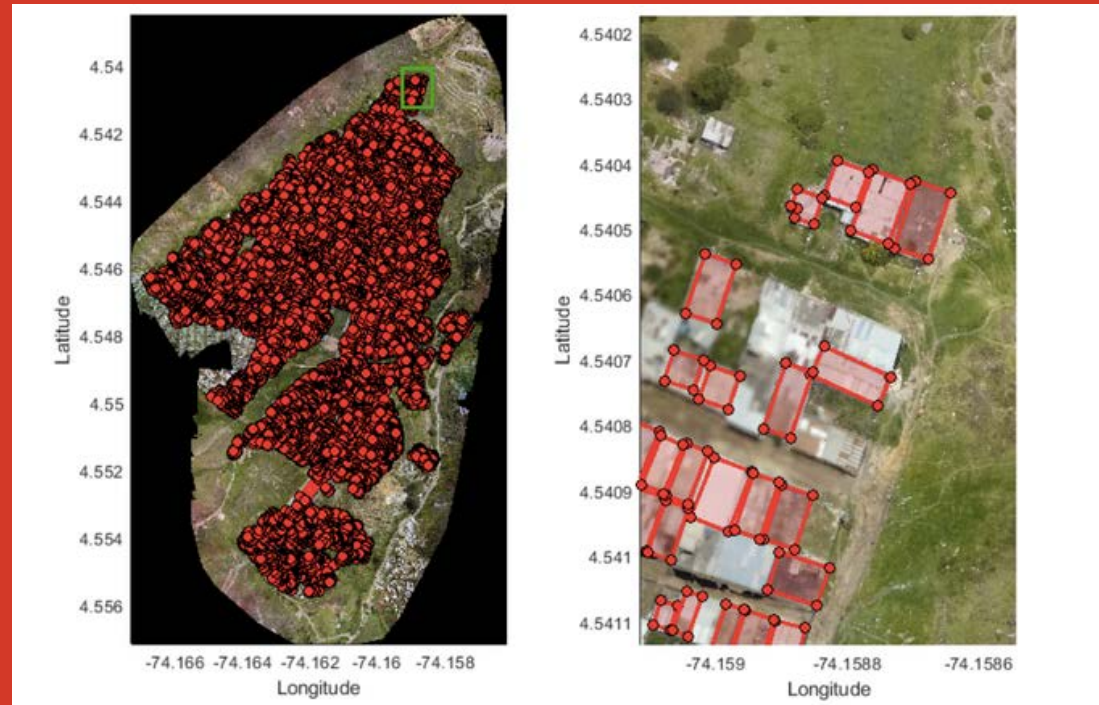
## Unusual Solutions

Launched in June 2019, the goal of this competition is to enable local experts to present solutions that address 3 of the main challenges we, together with the Flying Labs, encounter in our daily work: 1) New, relevant solutions for drone data & AI tools to solve local social challenges; 2) New solutions that enable local communities to turn drone data into action, including communities living in low-bandwidth environments; 3) New concepts and solutions that allow drones and data to be used ethically to solve meaningful problems.

Between June and August, 994 sign-ups from 102 countries resulted in 245 formal applications from 54 countries. Women represented 23 percent of all applicants and, in line with our goals, 86 percent of the formal submissions came from the Global South. In September, judges selected 3 finalists for each of the 3 key areas. These finalists come from Zimbabwe, India, Cameroon, Tanzania, Argentina, Papua New Guinea, and Guatemala. In October, each finalist received USD 15,000 in prize money to further develop their concept and turn it into a prototype over the coming 4 months. The competition will come to an end in February 2020, when the 9 finalists will meet in Nairobi to compete for USD 100,000 of prize money that will be awarded to the overall winner to implement their solution.

# Open AI Challenge

WeRobotics has coordinated a series of Open AI Challenges to crowdsource the development of feature-detection algorithms to quickly analyze high-resolution aerial imagery across a range of sectors, including food security in the South Pacific and sustainable development in East Africa. In 2019, WeRobotics teamed up with DrivenData and the World Bank to launch an Open AI Challenge to map disaster risk in the Caribbean. Communities in the region that often find themselves living in housing that is not up to appropriate construction standards are at the highest risk from a natural disaster. This risk is especially real for people living in poverty and informal settlements. While buildings can be modified to withstand disasters better, identifying those buildings is time-consuming, labor-intensive, and exorbitantly expensive. The purpose of this Open AI Challenge with the World Bank Global Program for Resilient Housing is to help governments across the Caribbean use drone imagery to more quickly and more cost-effectively identify buildings that need to be prioritized for fortification against disasters.



Drone imagery and AI can help accomplish this by automatically identifying the roof construction material, which is a significant risk factor for earthquakes and hurricanes, and a useful predictor for other risk factors, such as building material. Teams competing for the USD 10,000 prize will use high-resolution aerial imagery from St. Lucia, Guatemala, and Colombia to help develop machine learning classifiers that can automatically detect roof materials. A robust machine learning model that can accurately map the disaster risk for these areas will help identify priority buildings more quickly while driving overall costs down, thus increasing the impact of this resiliency effort. The winner will be announced in February 2020.



# Working Group Participation

Participating in international forums and high-level working groups enables WeRobotics and Flying Labs to communicate and advocate for the interests, priorities, expertise, and needs of local experts across the 25+ countries that Flying Labs operate in. This enables WeRobotics and Flying Labs to help inform policy-making that recognizes The Power of Local and thus prioritizes inclusion, diversity and equal opportunity. All time and expertise shared in these initiatives is on a pro-bono basis.

## ICAO



WeRobotics participated in the ICAO Task Force on Unmanned Aircraft Systems for Humanitarian Aid and Development (TF-UHAD). The Task Force aims to support ICAO's assembly in providing guidance and standards on UAS flight rules during disaster response. WeRobotics emphasized the role of local operators in rapid response and the need for taking into account local and social culture when planning global standards.

## African Drone Forum



WeRobotics, together with Tanzania and Senegal Flying Labs, are part of the African Drone Forum preparation team and support the WorldBank with expertise and contacts. Several activities led by Flying Labs are planned for the ADF2020 event (to be held in Kigali, Rwanda in February 2020), including on-site trainings and demos, plus participation and moderation of panels including the Business Plan competition jury.

## World Economic Forum



WeRobotics is actively engaged in two WEF initiatives and councils: the Geneva-led "Partnering with Civil Society in the 4IR" initiative (co-leading the working group on "Minimizing Trade-Offs in Technology for Good") and the "Drone and Aerial Mobility council" of WEF's Centre of 4IR in San Francisco.

# Internally Built Resources & Tools

To accelerate the development of capacity, WeRobotics has developed various resources and tools available to the network. Flying Labs have free access to a number of "How to" guides and templates to help plan and carry out drone mapping projects. 2 examples here below:

## Standard Operating Procedures

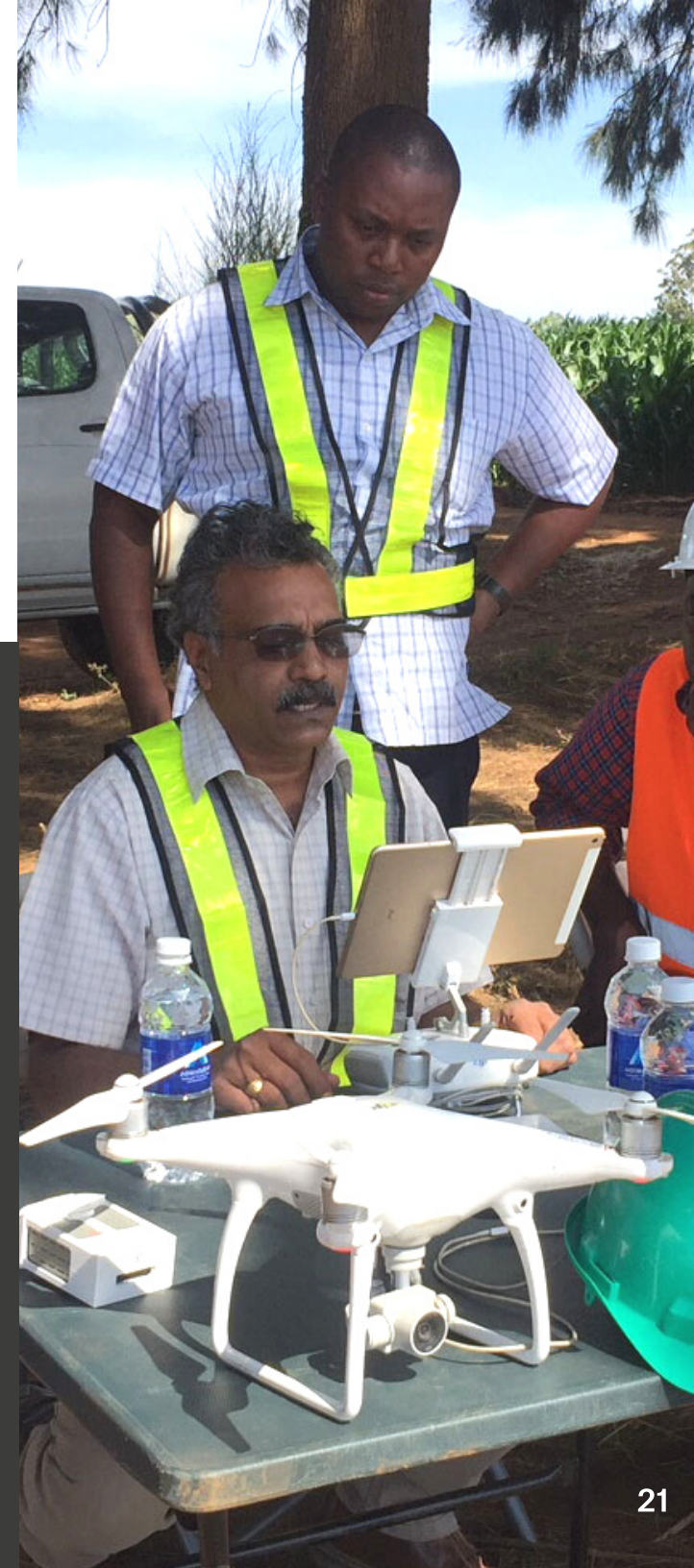


Standard Operating Procedures (SOPs) reference all necessary actions during planning, flying and emergencies. They list the members' roles and responsibilities, specify the rules under which drone flights operate, and outlines the safety management protocols on the ground and in flight. SOPs also include guidelines on specific topics, including lithium battery management, mission plan, data management, flight logging, and safety checklists.

## Framework Updates & Key Metrics



EZ Survey helps to estimate the time and cost involved in mapping an area. The tool gives Flying Labs the option to select their drone, sensor, and area size to receive estimates on the number of images collected, data acquisition and data processing time, as well as a cost estimate.



# **We Robotics**

## **Knowledge Sharing**

We support a global community to openly share learnings, inform ethical standards, convene stakeholders, and champion localization and collaboration. We do this by providing access to thought leadership, conferences, a platform to share lessons learned and best practices, and a network of like-minded peers, allowing for active South-to-South collaboration.



# Communications, Sharing, & Events

Building a community that connects local experts in 25+ countries to foreign experts requires a combination of online and in-person events. These events are essential to building trust and collaboration. They also catalyze information sharing along with new partnerships, the reason why WeRobotics and Flying Labs value these important events. In 2019, WeRobotics held its flagship WeR Global event and combined this with the first Flying Labs Retreat. Another first in 2019 was the celebration of Flying Labs Day. Also, several Flying Labs held their Regional Flying Labs Conferences. Equally importantly, WeRobotics and Flying Labs participated in several international conferences to promote The Power of Local and advocate for greater inclusion and diversity in the Social Good Sector.



## WeR Global

WeRobotics Global is an international conference held every other year that includes up to 50 participants from dozens of countries. The purpose of the conference is to bring local experts from Flying Labs together with international experts across a wide range of sectors. WeR Global serves as a platform that connects local expertise with international know-how, enabling information sharing, and catalyzing strategic partnerships. A total of 11 Flying Labs (out of 20) participated in addition to 34 select experts. Of these, 23 were women, 22 men and ages ranged from 23 to 63. Flying Labs from 11 countries kicked off WeR Global 2019 by sharing their latest activities, best practices, and lessons learned.

Flying Labs from 11 countries kicked off WeR Global 2019 by sharing their latest activities, best practices and lessons learned. The next section focused on advances in aerial robotics and ethical AI in the social sector, including talks from select experts in robotics and AI applications for food security, nature conservation, and disaster risk reduction. The third session looked at the transformation of transportation through cargo robotics. This session featured talks from select experts who are pushing the envelope in the use of appropriate cargo drones for TB testing, medicine & blood delivery, and Dengue reduction. The fourth and final session went beyond aerial robotics to explore the use of autonomous marine, ground, and space robotics for waste management, farming, water preservation, and development. The closing keynote of WeRobotics Global was given by celebrated science fiction author Malka Older who shared her critical insights into robotics and decentralization.

# Flying Labs Retreat

The first Flying Labs Retreat was held just before the WeR Global Conference, bringing together Flying Labs from 11 countries and the senior leadership from WeRobotics. The purpose of the 2-day retreat was to help foster more significant ties between labs, and between labs and WeRobotics, to build a close-knit community based on trust and common purpose.



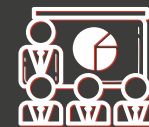
The retreat kicked off with a welcome from the co-founders, looking at where Flying Labs have come from and what they have achieved between 2016-2019. This was followed by a round of self-introductions that enabled all participants to get to know each other better, both professionally and personally. The next session was a value proposition workshop in two parts to help Flying Labs create strong value propositions for their labs. The final session of the retreat comprised a rehearsal, enabling Flying Labs to share their talks before the WeR Global event.

# Flying Labs Day

Kathmandu Flying Labs launched on September 25, 2015, in response to a devastating 7.8 earthquake. Kathmandu Flying Labs produced crisp aerial photos and 3D models as an alternative to existing fuzzy satellite images and hand-drawn maps. These new tools gave the disaster management team a clearer picture of where debris had been cleared or which buildings were at risk of collapse. This first lab gave rise to the final concept for WeRobotics, which had not yet been named nor fully formed.

All this changed in the months that followed. Kathmandu Flying Labs became Nepal Flying Labs, and Tanzania and Peru Flying Labs quickly followed. So on September 25, 2019, WeRobotics and Flying Labs celebrated the first official Flying Labs Day with all of the local experts behind the Flying Labs around the world. Flying Labs held open-days in their countries to celebrate The Power of Local.

## Panama Flying Labs Regional Conference



In February 2019, Panama Flying Labs organized the first-ever regional Flying Labs conference in Latin America. Set up as a “Regional version” of the WeRobotics Global conference, 50 hand-picked participants were invited to represent the Flying Labs of the Latin American region and share the knowledge gained through activities with a broader public. Flying Labs from Panama, Dominican Republic, and Peru attended in person while Chile was participating online. Participants included senior management of IDB, nonprofit and governmental organizations of Panama, Costa Rica, El Salvador, and Cuba, international organizations as well as technology partners. The excellent feedback received and confirmed the interest of organizations throughout the region would result in the organization of a follow-up conference in 2020 (planned for June 2020).

## South Pacific Flying Labs Regional Conference



South Pacific Flying Labs, University of the South Pacific (USP) and WeRobotics organized the second annual South Pacific Robotics Conference. Kindly hosted by the GIS Lab at USP, the purpose of this conference was to actively create synergies, connections, and partnerships between different organizations and projects engaged in the use of aerial, marine and terrestrial robotics for social good in the Pacific Region. The conference unpacked the lessons learned and best practices in the local use of robotics to improve humanitarian, public health, development and environmental projects in the South Pacific. As such, the conference served to connect, support and scale the growing number of locally-led robotics projects.



# ITU AI for Good Summit

WeRobotics gave a talk on the Power of Local at this high profile conference in Geneva. This talk was part of a panel focused on Robotics for Good. All the other talks on the panel focused on the use of robotics for the Global North by the Global North. Only the WeRobotics talk emphasized the role of local experts in the Global South and the rising inequality around access to skills, technologies and new opportunities.



## World Summit on the Information Society (WSIS)

WeRobotics organized and moderated a panel on the use of AI and machine learning for social good. Panelists included experts from the humanitarian industry (UN), the private sector (Picterra) and academia (ETH). The session was well attended and prompted a high level of engagement from participants.

## WEF C4IR Inaugural Meeting of the Global 4th Industrial Revolution Councils

As a member of the “Drone and Aerial Mobility” council, WeRobotics participated in the two-day inaugural meeting in May in San Francisco. In addition to the active contribution through the council workshops, WeRobotics was also asked to be a “Firestarter” at one of the joint sessions on “Inclusion and equity.”

## Skoll World Forum

Invited by the Autodesk Foundation, WeRobotics attended for the first time the Skoll World Forum in April 2019 in Oxford. In addition to the highly-interesting sessions attended, the networking opportunities that this unique and inspiring forum provided have been invaluable. WeRobotics hopes to be among the few privileged social entrepreneurs to be invited to the 2020 edition.



## **Strategic Organizational Achievements**

One of the major investments of 2019 was in our organizational setup. We carried out a full review and update of our financial and accounting processes, did the same for our monitoring and evaluation framework, revised our branding and communications strategy and consolidated our Board of Directors and Board strategy.

# Monitoring & Evaluating Our Impact

As any organization starting, our M&E indicators for the first three years have been primarily defined by the various grants and related activities. WeRobotics is not your “typical” organization and has a unique governance model very much in line with our ecosystem and network-driven approach. We wanted this fact to be reflected in our M&E strategy. To effectively do so and create a new M&E approach that does not only reflect our subjective view but also fully includes the needs of our network, partners, and donors, we collaborated with Columbia University SIPA through their workshop program.

For six months, a dedicated SIPA student team, supported by an expert professor on M&E, elaborated both a fitting list of M&E criteria as well as an implementation plan in collaboration with the Flying Labs network. Extensive desk and field research with the majority of Flying Labs produced a practical and easily implementable strategy by the end of May 2019. Implementation of this strategy started in late summer 2019, with the first numbers available by the end of 2019.



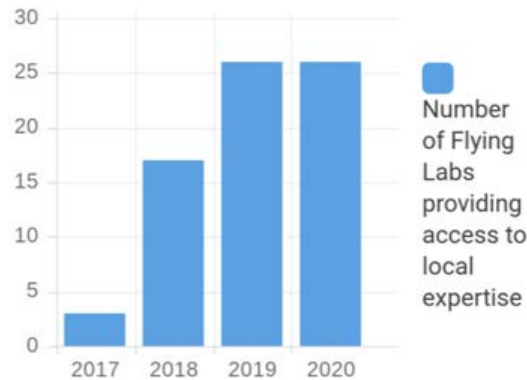
The outcome of this collaboration and the new M&E strategy have been published on our website in late 2019. Impact numbers are structured in 3 main categories. Discover these categories on the next 3 pages.

Please visit [werobotics.org/impact](https://werobotics.org/impact) to learn more about the impact of our activities. Numbers will be updated quarterly.

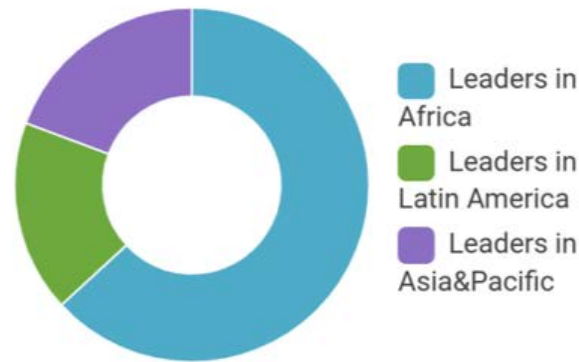
We will continue our M&E activities based on this strategy throughout the next year, all the while adapting and refining the best implementation strategies. A new collaboration with SIPA is planned for 2020 to build on this initial strategy and include additional elements, such as measuring the impact of our unique network model.



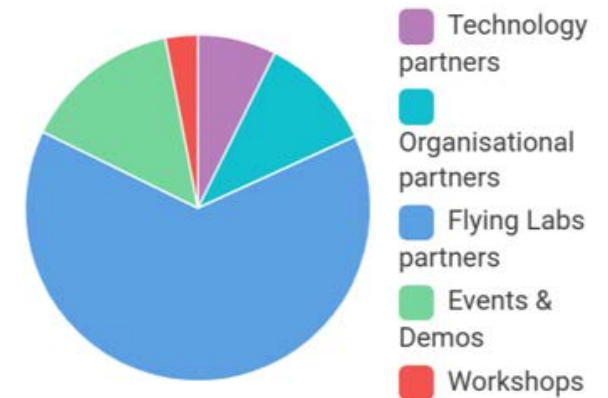
### Local Access



### Leadership Transfer



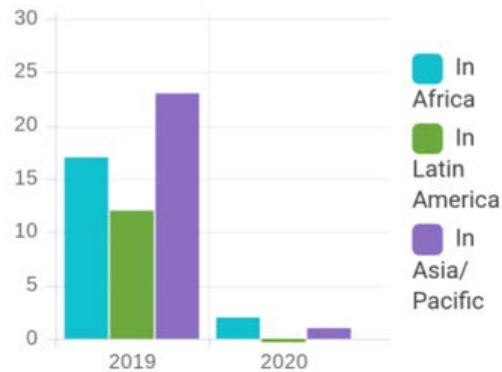
### Ecosystem Building



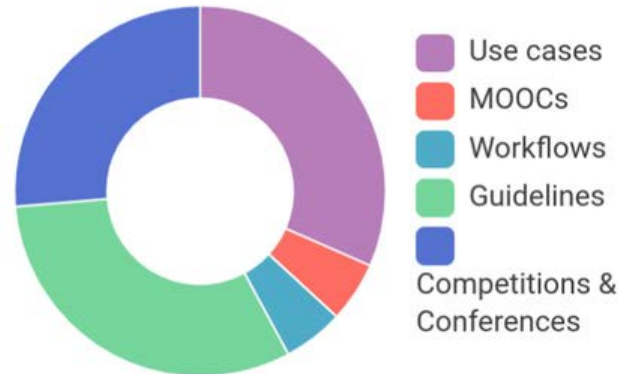
## Inclusion & Access

Drones, data and AI have transformed how social challenges can be tackled. While these emerging technologies are readily available, access to them is unequally distributed and not sustainably localised. Through the Flying Labs network, we shift power from the global back to the local by ensuring that local experts with local knowledge and lived experience have the access they want and the leadership opportunities they seek to implement technology for good projects themselves. In the process, they grow local ecosystems while being connected to a global community.

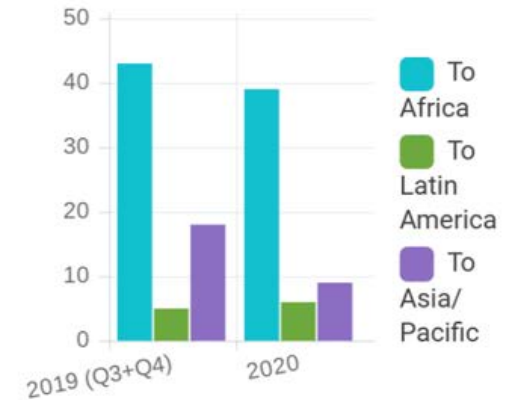
**Local Solutions (Locally-led Projects)**



**Enabling Resources**



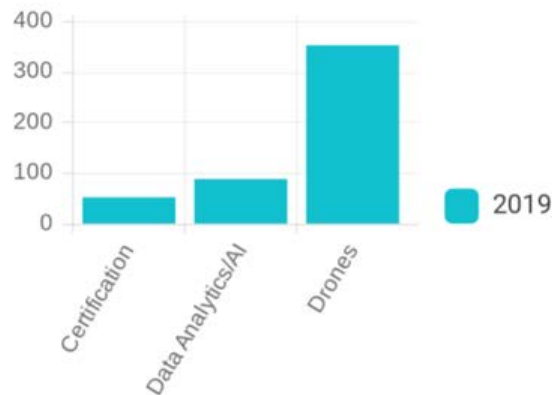
**Opportunities Transferred**



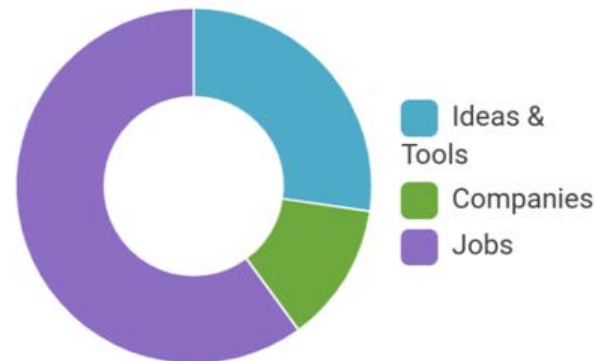
# Resilient Communities

Local experts are best placed to tackle local challenges. They have the local knowledge, the local language, and the lived experience. Enabling local experts to access new technologies, new skills, and new opportunities allows them to tackle problems more effectively, more sustainably and more inclusively than foreigners who often take a top-down, exclusive and technocentric approach to problem-solving. By transferring opportunities, supporting locally-led projects with best practices, workflows, and guidelines and allowing access to south-to-south collaboration, communities have all they need to manage their own solutions.

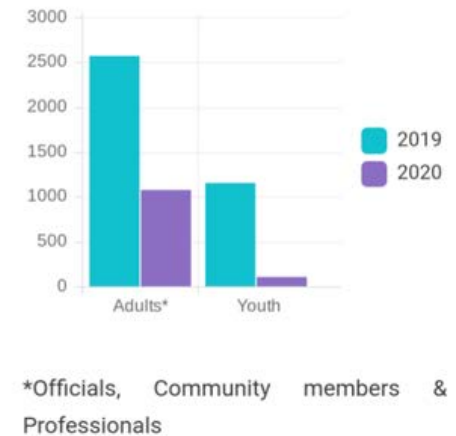
### Professionals Trained



### Entrepreneurs Supported



### Stakeholders Engaged



## Future of Work and Entrepreneurship

Building local expertise in the responsible and ethical use of drones, data and AI allows local civil society and government to integrate emerging technologies into their workflows and enables local entrepreneurs to develop new businesses that create jobs and scale positive social impact. Through youth-specific programs, community engagement and hands-on demos, the wider public is able to better understand how these technologies can make a real difference, and get inspired to become personally engaged.



# New 'Power of Local' Video

WeRobotics completed its branding strategy review in early 2019, which led to the launch of the organization's new tagline: The Power of Local. WeRobotics seeks to change the pervasive mindset that foreigners (particularly from the Global North) know best. As such, the organization is committed to demonstrating the power of local through the growing Flying Labs network. This new branding strategy was followed with a full review and update of WeRobotics.org and FlyingLabs.org webpages and corresponding social media challenges. In addition, WeRobotics co-created its first two organizational videos, one on the power of local that features Flying Labs from across the world, and the other is a video on the organization's Theory of Change.

# A Unified Board and Updated Board Strategy



WeRobotics is a truly global organization, with staff in 4 countries spread over three continents and two legal entities, in the USA and Switzerland. While both legal entities started with their separate boards, this board structure did not fit the current needs of the integrated organization anymore. Working actively with the members of both US and Swiss boards, we created a single Board of Directors in May 2019.

# Finance: Official Review



As a growing organization, both in terms of activities and funds and the outlook of having our organization audited as of 2020, we decided on taking a first active step to prepare for the audit through an official review of our 2018 financials. The positive outcome of this first review confirmed that investing in an expert back office team and robust financial procedures throughout 2018 and 2019 were worth the investment. We hence feel ready for our first audit of the 2019 financials in 2020.



## **Team Members & Partners**

The key success factor of our rapid growth is people: both our team members and the strong partnerships we have been able to initiate and cultivate. We deeply believe in partnerships and ecosystems, the reason why we keep our team small and engage as much as possible in meaningful and impactful partnerships that create value for all involved.

# WeRobotics Team

The WeRobotics Team will remain small by design while expanding the Flying Labs network across the Global South to change mindsets and bring about systems change. WeRobotics has a strong team in place to pursue this mission. The executive team is comprised of co-founders Sonja Betschart and Dr. Patrick Meier, who lead the executive management of WeRobotics, and Dr. Andrew Schroeder, who acts as the chairman of the Board. The senior team also includes expert leads on AI/Robotics for remote sensing and cargo delivery along with a healthy and active Board of Directors. The team is rounded up with seasoned professionals who manage our back office in a very efficient and number-driven way and young, highly motivated support and coordination staff. Interns also play an instrumental role in WeRobotics both from the organizational and engineering sides.

Together, the full team has accumulated over 40 years of experience in the use of robotics for social good. It is worth noting that the civilian drone sector is only seven years old, so the 40 years of combined experience goes a long way in this sector. Senior staff members are also in place at three Regional Flying Labs and senior coordinators assigned to all 25+ Affiliate Flying Labs.



The key strength of the leadership team is its diversity, given the different backgrounds, complemented by highly motivated and skilled team members who each bring in her/his expertise and experiences. This makes for a highly complementary team that shares the same core values.

Together, for example, WeRobotics co-founders (average age 47 years old) bring more than 60 years of professional experience with startups, business incubation, industry, international organizations, entrepreneurship, civil society, humanitarian aid, development, public health technology, and AI/Robotics. They have also worked in 40+ countries in the Global South.



# Partners

Strategic, long-term partnerships are key to our model and are indispensable to the work of WeRobotics and Flying Labs.

They bring relevant resources, expertise and technologies to Flying Labs and also serve as important clients who seek the services of WeRobotics and Flying Labs worldwide.

## Organizational Partners



New organizational partners in 2019 included the Center for Disease Control (CDC) and World Health Organization (WHO). The World Food Program (WFP) and World Vision International also re-engaged with WeRobotics and Flying Labs for trainings.

## Core Donors



In 2019, the following donors supported our core work and allowed us to concentrate on growing The Power of Local and building an enabling environment: Rockefeller Foundation, Hewlett Foundation, Autodesk Foundation, IDB and DFAT. And we were able to add our first Swiss-based donor with the Jansen PrimeSteps Foundation.

## Project Donors



The Omidyar Network, Gates Foundation, and the Tides Foundation all became prominent new project donors for WeRobotics, enabling the organization to organize an international challenge (Unusual Solutions), expand cargo drones to Cameroon, and to improve the coordination of drone deployments during disasters.

## Technology Partners



WeRobotics serves as an accelerator between industry and local experts across Flying Labs. As such, strong partnerships with the leading companies in the drones and data industries is essential. In 2019, we deepened our partnerships with ESRI, Pix4D, Picterra, DJI and senseFly and added our first cargo drone, the Swiss start-up Dronistics.



## 2020 Outlook

The new year represents a world of new opportunities for WeRobotics and Flying Labs based on the learnings, needs, and impact from 2019.

The main priorities for 2020 will focus on the data-value chain, closing the feedback loops, increasing the quality of Flying Labs, growing the number of technology partnerships and further diversifying revenue streams.

# Moving up the Data Value Chain



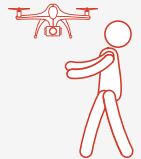
The Power of Local does not begin and end with data collection. The Power of Local extends to data analysis and interpretation, advocacy and local action. The demand for localized and contextual analysis is growing as more organizations recognize the extensive negative impact that data bias can have. Those with local knowledge, who understand the local language, culture, society, and related dynamics are often better placed to make sense of the data collected than a foreign analyst based some 5,000 kilometers from where the data was collected. For this reason, one of our leading priorities for 2020 is enabling Flying Labs to move up the data value chain by offering a range of new services focused on data analysis and actionable analytics.

## Turning Data Into Action



This priority is directly connected with the importance of moving up the data value chain. To be sure, localization does not end at data analysis but with informed, locally-led action and impact evaluation. WeRobotics will thus expand its work with Flying Labs to help close the data-to-action feedback loop. An important component of this priority will be the development of a stakeholder engagement strategy for Flying Labs to implement from mid-2020 onwards.

## High-Quality Flying Labs



The Affiliate Program for Flying Labs was launched in 2018. Based on a franchise model, the Affiliate Program enabled the rapid growth of the Flying Labs network, which continues to this day. Naturally, some Flying Labs are more experienced than others, which means that the level of expertise between Flying Labs varies to a certain extent. A key priority for 2020 is to ensure that all Flying Labs have a clear path they can follow to deepen their expertise and offer a range of high-quality services. We will work closely with Flying Labs to co-create an additional model that allows to actively manage the quality aspects and benchmarking possibilities for and with Flying Labs.



# Expanding Technology Partnerships

We will invest more dedicated resources to actively manage all existing technology partnerships to create genuinely engaged partnerships that provide a clear value to all parties involved.

Flying Labs are increasingly receiving requests that go beyond mapping and data collection as a use-case concerning aerial drones. More and more Flying Labs are developing expertise and experience in the cargo drone space. Some labs are also exploring the use of tethered drones to provide connectivity. Others are getting requests for bathymetry mapping, which requires the use of surface water drones and additional sensors. Meeting this growing demand from Flying Labs requires that we expand WeRobotics' network of technology partners to include companies and promising startups in the cargo drone space and further afield.



## Diversify Revenue Streams

We have been able to reduce our dependence on philanthropic donations from 100% in 2016 to 60% in 2019, adding a number of additional revenue sources such as consulting and training. Our goal for 2020 is to keep growing the diversity of our revenue streams and to have a diversified portfolio both for philanthropic donations as well as income generated through our own activities.

