ANNUAL REPORT
2021

We Robotics
THE POWER OF LOCAL

werobotics.org

CONTENT

always be
full of
inspiration

Unmatched
by our
diversity

Statement from the Co-Founders

We recently received the following message (completely unsolicited and unexpected) from a leading global expert in the drones for good space:

> *"I was just chatting with someone about my research work around global drone disaster use… and they assumed that since this involved NGOs, it meant I *must* be speaking to international expat staff. And I realized that as a matter of fact, in all the interviews I've done for research projects like this one over the years, I haven't spoken to a single expat NGO staffer about drones. Like wow, talk about an area in aid and disaster that…actually has been successfully localized? That's a huge achievement! WeRobotics has really played a pivotal role in that and that's pretty cool."*

We're very grateful to have received this specific compliment from such an experienced leader in the field. This is what we want WeRobotics to be known for: successful localization. This doesn't mean that technology is less important. Technology will always be essential to our work because the intersection of social good and emerging technologies is precisely where the lack of equity is most pronounced and systemic. To be sure, while we're seeing great leaps forward in robotics, AI and other emerging technologies, the "Technology for Good" space is still stuck in the stone age when it comes to social justice. Emerging technologies won't resolve long-term historical inequalities, social injustice, discrimination and racism. Instead, historical inequalities, social injustice, discrimination and racism significantly constrain the equitable, positive and sustainable social impact that emerging technologies can have. This explains why expanding locally-led action is key, and why 2021 was such a pivotal year for WeRobotics and Flying Labs. We invite you to read this annual report to learn more about this along with our accomplishments and learnings in 2021.

WeRobotics transferred **45% of its revenue directly to locally owned organizations in 2021,** including local non-profits, social enterprises, startups and universities.

OUR TEAM

5
Continents

19
Countries

57%
Women

32 Flying Labs

219 Leaders & Experts

LOCAL SOLUTIONS:

65 Projects Initiated

47 Trainings Organized

ECO-SYSTEM:

90 Local & Global Ecosystem Activities & Events Organized (WeR & FL)

238 Local & Global Partners

STORY-TELLING:

92 Blog Posts Published

38 Webinars Organized

29 Conferences Attended

CAPACITY STRENGTHENING:

84 Resources/Tools Created

28 Project & Training Use Cases Created & Published

25 Internal Learning/ Sharing Sessions Organized

Strategic Organizational Achievements

» Shift the Power Strategy

We founded WeRobotics to offer a practical alternative to systems dominated by foreign-led and top-down interventions. This explains why WeRobotics brings together local experts, communities and activists to co-create an inclusive and sustainable network of local leaders to build an effective model that other organizations can adopt to accelerate locally-led efforts in response to pressing challenges. By shifting power with local experts and organizations with a deep understanding of the local context, primarily the Flying Labs Network, locally-led projects benefit from local expertise, buy-in and participation and avoid the (sometimes catastrophic) pitfalls of arrogance or ignorance.

Throughout 2021, we consolidated our work on our systems change strategy through applied research, open consultations with experts, the publication of our localization report, and participation in select workshops including those we organized. This resulted in an updated shift the power strategy made up of three distinct initiatives:

Inclusive Leadership: WeRobotics has served as the primary enabler of the Flying Labs Network since its co-creation five years ago. It is now time to take the next logical step to expand the positive impact of the network by co-creating an independent and locally-led enabler and facilitator of the Network. We have worked closely with the Flying Council to create a detailed plan for "FL.org", the independent and locally-led legal entity that will take on the core responsibilities of WeRobotics in the near future. Throughout the year, we organized four joint co-creation workshops with the council to formulate the roadmap and transition to an independent FL.org. With the process starting in 2020, it is the Flying Labs Council who determines the timeline and priorities of this process, rather than WeRobotics.

Inclusive Networks: The Flying Labs Network is just one example of an inclusive network. As part of our endgame, we want to share the inclusive networks model we have co-created with the Flying Labs Network with other organizations so that they can adopt and adapt the model for their localisation strategies and more importantly, to shift their power. By mid 2021, we shared a detailed concept note with a number of international organizations, partners and supporters who voiced interest in adopting the model. The feedback received allowed us to adopt the concept note and to submit first specific proposals by the end of the year. We expect the model to be adopted by other organizations in 2021 and support them in their implementations by openly sharing our learnings, methodologies and frameworks.

Inclusive Power: As international nongovernmental organizations (INGOs), we tend to have a disproportionate amount of power in relation to national and local organizations. This has not resulted in disproportionate positive impact, however, or greater equity and greater social justice. Hence the important advocacy around localization, DEI, shifting the power, reimagining INGOs and decolonizing aid and development. These efforts, however, may be more symbolic than real if they don't actually reduce the power footprints of our INGOs. By power we mean authority, control and influence. INGOs can become measurably more effective by reducing their power footprints. But we don't have a set of practical metrics and industry benchmarks when it comes to reducing our footprints. This explains why we began developing the Power Footprint Project in 2021 as part of our Inclusive Power strategy.

Find a number of related blog posts and learn more on our systems change webpage at
werobotics.org/shiftthepower

» Renewed Board of Directors

On July 13, 2020, we made a public commitment to fully revamp our Board of Directors and Advisory Board to reflect the diversity we celebrate within the Flying Labs Network. In the months that followed, we worked on a new Board strategy and interviewed a range of prospective candidates. On December 3, 2020, we elected four new Board Members who took over from four founding Board Members. These new Board Members are Arbie Baguios, Huguette Diakabana, Dr. Célestin Mong and Dr. Chrisanta Muli. We are exceedingly fortunate and very grateful to have had these accomplished members on the Board of Directors throughout 2021.

» Organizational Communication

In 2021, we had two major changes to our organizational communication.

In March, we re-launched a new website for WeRobotics, with a complete overhaul of the structure of the website and level of detail of content. Much has evolved since the creation of the previous website in 2019, especially our systems change strategy. The re-launch allowed us to update the structure and content, and to add a much needed page for our systems change strategy. We also added more detailed information in relation to our organization, to further improve transparency.

In November, we undertook a second re-launch of the website, this one however less visible as changes made were in relation to wording. Supported by the communications team of Black Fox Philanthropy and after being introduced to the concept of Asset Framing thanks to a free training offered by the Hewlett Foundation, we decided to completely review the words with which we were presenting our organization and our work.

» Evolving Impact Measurements

As a young and dynamic organization that focuses its operational activities first and foremost on the priorities expressed by proximate leaders across the Flying Labs Network along with their community partners, there is a constant and strong need to keep evolving our impact criteria. The same applies to Flying Labs and the criteria they co-created to measure their own impact. For this reason, our impact page is updated three times a year, both with current numbers but also with new criteria.

In addition to the WeRobotics' impact numbers, the impact page for the Flying Labs Network is now also publicly available on the Network's website page.

Learn more on the two impact pages:

- werobotics.org/impact
- flyinglabs.org/impact

» Holacracy @ WeRobotics

Our organization always had a flat hierarchy as well as digital setup since its creation in 2015. This allows us to find team members with the required expertise, values, skills and entrepreneurial mindset, independently of where they live or come from. In essence, our organization has always been decentralized with a good balance of distributed power.

In early 2021, we decided to formalize this setup with three specific goals in mind:

1. Learn how a methodology such as holacracy* can allow us to collaborate more efficiently in our decentralized setup and clarify accountability of each team member all the while coming together through a jointly agreed-on organizational governance system.

2. Identify if such a setup would allow the legal entity of the Flying Labs Network (see point on Inclusive Leadership above for more information) to decentralize its power and manage its operations with a high degree of transparency, effectiveness and agility.

3. "Learn by doing" and by implementing a Holacracy-based management setup for WeRobotics first, before proposing it for the FL.org setup.

> *Holacracy is a method of decentralized management and organizational governance, which allows the distribution of power, authority and decision-making through a "holarchy of self-organizing teams" rather than being vested in a management hierarchy.*

» Value Transferred to Flying Labs Network

HIGHLIGHT

International organizations in the aid and development sectors transfer less than 5% of their revenue to local and national organizations. In fact, direct funding to local actors as a percentage of total funding was 3.1% in 2020, according to the latest figures. It is also worth noting that most funding to local and national actors in 2020 continued to be directed at national governments.[1]

At WeRobotics, we transferred 45% of our revenue directly to locally-owned organizations in 2021, up from 38% in 2020, and 23% in 2019. This puts WeRobotics at almost double the aspirational 25% benchmark set by the Grand Bargain and Charter4Change.

» Covid-19

For a second, consecutive year, the pandemic kept impacting the operations of both WeRobotics and Flying Labs. The pandemic and its countermeasures have also created an even higher degree of inequality and put strains on the economies of most of the countries in which Flying Labs are active. This is in addition to an already increasing number of economic, societal and environmental issues these countries are facing. In short, a difficult environment to flourish when generating the majority of income through services provided to local clients such as government agencies, local non-profits and more. Hence the most pressing needs expressed by Flying Labs were to support both strengthening technical and organizational expertise as well as organizational development and engagement strategies.

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1. https://devinit.org/51e059#section-4-3

Though the activities and engagements of Flying Labs stayed lower due to direct and indirect impacts of COVID, all Flying Labs apart from 2 (Burkina Faso and La Réunion) have been able to sustain by adapting various coping strategies (virtual activities, increased collaboration between countries, etc.). In light of all the restrictions and activity cancellations faced with the pandemic, Flying Labs and WeRobotics have still been able to implement and conduct a higher number of projects, trainings as well as advocacy and ecosystem activities than expected.

And while growth was slower, the Flying Labs Network has kept on growing. So has our organization's income. This second, consecutive pandemic year has been an important learning exercise for us and Flying Labs, evidence that our inclusive networks model based on local need and self-sustainability by building on existing organizations allows us to sustain even through economic hardship.

We would like to take the opportunity to thank and honor all Flying Labs for their creativity, resilience, grit and ingenuity shown since the beginning of the pandemic.

» Audits

Financial Audit

For our third consolidated financial audit, we have commissioned a new auditing firm adapted to both the size and needs of our growing organizations. This new collaboration with the auditors of Haskell & White has been a wonderful learning experience on how to keep on adapting our policies, processes and governance to be a lean and efficient organization. Find our audited financials on our website under werobotics.org/organization

Cybersecurity Audit

Recognizing the importance of secure IT systems and practices, WeRobotics had a comprehensive cybersecurity risk assessment performed by an independent team of Certified Fraud Examiners and Certified Information Systems Auditors. The team began their examination in December of 2020 with an evaluation of our safeguard procedures, privacy, resiliency and reputation risk. By March 2021, WeRobotics was assessed with the letter grade score of A-, an extremely rare high mark for an organization of our size and age. We proudly continue our IT practices by remaining alert to potential threats, training our employees to use best practices and monitoring our systems.

» Ashoka Fellowship Process

In early 2021, WeRobotics' Co-Founders were invited by Ashoka Switzerland to take part in the Ashoka Fellowship candidacy process. And to choose one of the Co-Founders to represent WeRobotics as Ashoka Fellowships are personal, life-long fellowships. Given the fellowship's important focus on social entrepreneurship, WeRobotics' Co-Founders decided that Sonja Betschart would move forward with the fellowship application. Ashoka Fellows are chosen based on their creativity, originality, entrepreneurial quality, ethical fiber, and social impact. The one-year selection process is challenging and thoroughly assesses both the candidate as well as the organization through five different rounds of assessment. Having it made through 4 out of the 5 selective rounds by December 2021, the final, decisive round was scheduled for February 2022.

While this report focuses on 2021, we are both happy and proud to share that Sonja's Ashoka Fellowship has been confirmed and publicly announced in April 2022. Read more in this blog post.

Flying Labs
Network

» Network Highlights in 2021

With the pandemic still raging globally in 2021, we didn't expect new Flying Labs to join the network. The demand for Flying Labs still kept growing, however, and we were very pleased to welcome three new Flying Labs: Bolivia, Fiji, and South Africa.

Bolivia Flying Labs aims to create inclusive and immersive learning experiences with drones and robotics for the next generation of innovators—particularly women. The Flying Labs aims to partner with other institutions to bring in-person and online training and events to a broader audience.

The team of the new Fiji Flying Labs already collaborated with South Pacific Flying Labs in the past, including a project fighting against Dengue fever. Fiji Flying Labs wants to further work on pre-and post-disaster mapping of communities and agriculture and high-yielding crop analysis for farmers and growers.

The focus of South Africa Flying Labs is primarily on STEM, working with schools, start ups and local schools and creating entrepreneurial opportunities in the drone for good sector.

» Capacity and Skill Strengthening

Turning Data into Action program
While we support Flying Labs with a wide range of technical, operational, communication and opportunity development resources, we were always dreaming about creating more complete programs that bring together a range of resources and support Flying Labs in their success and impact they create together with their local clients and stakeholders.

After an in-depth analysis and creating a wide variety of resources in 2020, we officially launched our internal "Turning Data into Action" program in spring 2021. The program aims to provide Flying Labs with the tools and techniques to facilitate a positive impact by improving the stakeholders' data literacy and Flying Labs' stakeholder engagement skills.

The program is made up of a Checklist guiding users through the project and a Handbook including key points, best practices, tools and resources. Both follow the same structure based around five following areas of interest: Interaction, Project Definition and Pre-Analysis, Project Contract & Planning, Data Usage & Sharing and Project & Impact Evaluation. The program launch was supported with a dedicated series of WeSupport sessions as well as a first series of microgrants (read more below).

WeShare

Since its launch in 2020, we have continuously and extensively developed "WeShare", the internal Knowledge Sharing Platform for Flying Labs. WeShare is home to over 50 dedicated resources including a range of thematic guidelines and workflows, resources on communication, fundraising, business and development, software guides as well as project and training portfolios. The platform keeps growing with regular content, news and opportunities for Flying Labs and is updated on a regular basis, including by resources created and shared by Flying Labs.

Guides & Workflows

WeRobotics and Flying Labs co-created a series of guidelines & workflows available on WeShare. The guides aim to give a starting base and practical advice around a particular topic of expertise while workflows can be illustrated as a series of steps that need to be completed sequentially in a diagram or checklist. Guidelines and workflows developed or updated in 2021 include Youth training & STEM, Image Classification, Data Compression, Wetland Identification Model, GNSS Positioning Techniques and Crop Analysis.

WeSupport Sessions

Following on the success of WeSupport sessions in 2020 (interactive virtual learning sessions deep diving into technical and operational resources), we organized over 15 new sessions throughout 2021 on topics such as Data Ethics, Data compression, GIS integrations for aerial imagery sites and high-resolution demographics, How to handle a drone crash, IT system requirements explained, Pix4D portfolio explained, Preparing and executing a project for an international client, Using drone imagery for OpenStreetMap, Visual Storytelling and a full series on Turning Data into Action.

Replicable Use Cases

Working closely with Flying Labs, our Drone and Data team has helped document over 40 new project and training use cases in 2021. Use cases are short yet detailed technical descriptions of projects and trainings implemented by Flying Labs. Project use cases contain for example information essential for easy replication by other Flying Labs, such as project scope, location, software and hardware used as well as details on data acquisition, processing, and analysis.

Here a selection of use cases published by Flying Labs in 2021:

Erosion Mitigation Using Drone Data, Livestock Management Using Drones and Artificial Intelligence, International Waterfowl Counting Day in Djoudj Bird Park, Monitoring of Illegal Dumping of Sewage Sludge, Study of Vegetation Composition and Plastic Concentration in Mangroves, Using Drones for Stockpile Audits for Chunga Dumpsite, Drone Mapping of Saline Lands in the Commune of Loul Sessène, Drones to Mitigate Gully Erosion, Disaster Preparedness with Local Governments, Using GIS to Assess, Model and Analyze Floods. A Case Study at Turkwel Dam and its Basins, Protecting Harare's Wetlands Using Drone Data, Using Drones to Update Land Housing Register in Downtown Areas of Ouidah, Preserving Inagi, The Green City in the Suburbs of Tokyo.

Microgrants

Our microgrant program allows Flying Labs to address specific topics and challenges by supporting them with small grants. Each year, we run several series of microgrants, based on opportunities as well as Flying Labs' demand. In 2021, we awarded 11 microgrants through following series:

- **Turning Data into Action Program:** Benin, Kenya, Namibia, PNG, Zambia and Zimbabwe Flying Labs benefitted from the Turning Data Into Action microgrant. The program aims to equip Flying Labs with the tools and techniques they need to facilitate and enable their stakeholders' ability to improve impact and action based on drone data. Data is a substantial part of our work, including providing local decision-makers and actors with data products and analysis based on acquired drone data. This microgrant allowed us to test the program by determining with Flying Labs which elements were useful (how and why), what was missing and what was not applicable. The highly valuable insights shared by the micro-grantees allowed us to further strengthen the program and resources, available to all Flying Labs.

- **Skydio:** this series supported by Skydio provided Flying Labs with Skydio drone kits and access to Skydio training resources. Through this microgrant, Namibia Flying Labs assessed public hospital elevated towers and Nepal Flying Labs compiled high resolution data of heritage sites in Changunarayan Municipality to support reconstruction efforts.

- **Twin Science:** Fiji, PNG and Uganda Flying Labs were awarded the Twin Science microgrants to diversify STEM program capabilities. As part of the microgrant series, Flying Labs also received dedicated training from Twin Science.

In addition to the microgrants, we have also closely collaborated with Flying Labs through a number of sub-grants and paid consultancies.

» Opportunity Transfer

Proximate leaders and local organizations are often sidelined even when they have the demonstrated expertise and access to relevant emerging technologies. This explains why knowledge exchange and technology transfer alone is not enough to expand locally-led practice and to shift the power. To this end, we are actively engaged in opportunity transfer as well. One of our key roles as an enabler of the Flying Labs Network is to drive concrete and meaningful opportunities to Flying Labs; opportunities that typically go to foreign experts and organizations. We drive this transfer of opportunities through direct and indirect actions. For example, we directly scope out opportunities using our own proximate contacts and networks, as well as through our own applied business development research. By actively promoting Flying Labs and local expertise far and wide, we also enable Flying Labs and their hosting organizations to gain greater visibility, thereby indirectly driving additional opportunities to them. In 2021, we transferred 113 distinct opportunities to Flying Labs and their hosting organizations.

» Shared Governance

In late 2020, we introduced the Flying Labs Global Model, which was requested and co-created by Flying Labs. This is an essential piece of the Flying Labs model as it allows each Flying Labs to measure the unique strengths they bring to the network as well as the gaps they can fill. After an initial self-evaluation round in November 2020 to set the baseline, we organized two more rounds in 2021 with a sixmonth interval between these three rounds. We also invited Flying Labs to share best practices between themselves to improve gaps. As of 2022, evaluations rounds will be annually to keep on tracking progress and qualitative growth.

» Flying Labs Website Update

In parallel to updating WeRobotics' website, we also gave a complete overhaul to the Flying Labs website. Starting with a new and improved homepage and adding an impact page (see more information here under), we also worked with a number of Flying Labs to define a new format for the individual Flying Labs webpages. First individual Flying Labs webpages have already been updated to the new format, like for example Kenya, Panama, Nepal, Bolivia and Senegal. All other individual webpages will be updated to the new format in 2022.

» M&E and Impact Page for Flying Labs

As the Flying Labs Network grows, so do their members, partners, activities, projects, and resources generated to share experiences and lessons learned. In this rapidly growing network, having an effective monitoring and evaluation system that allows us to learn from our experiences to move forward and demonstrate our work's impact is vital. To capture this growth and the impact generated by 30+ Flying Labs as a collective, we have launched a separate impact page for the Network in early 2021 on behalf of the Flying Council. As WeRobotics' impact page, the impact numbers are updated three times per year. Discover the Flying Labs Network's impact page at flyinglabs.org/impact.

Knowledge Sharing & Storytelling

» Virtual Flying Labs Retreats

The Flying Labs Retreat is our regular event facilitated by WeRobotics that brings together a professionally and culturally diverse audience of Flying Labs from more than 30 countries. In 2021, we organized two virtual retreats, in February and October 2021. Led primarily by Flying Labs, the virtual retreats comprised many panel sessions, roundtables, learning sessions, break-out sessions and sharing of the beautiful cultures making up the network and WeRobotics.

The overriding theme for the Flying Labs Retreats was the Power of Local in solving local problems using local leadership, expertise, and knowledge but we also covered topics on Artificial Intelligence (AI), reforestation, disaster response, project documentation, pilot certification, civil aviation authorities and regulations, beyond visual line of sight (BVLOS), STEAM projects and managing COVID-19 in 2021. Other topics included our Turning Data Into Action, local drone repairs, and safety culture.

Most importantly, the Retreats were an opportunity for Flying Labs to share local wisdom, traditions, and rituals from around the world. They led cultural celebrations sharing their traditional dances and songs as well as stories and sayings.

Our second retreat also included participants from WeRobotics Global, an invite-only forum featuring expert speakers and opportunities for new collaborations.

We collectively dream to hold our next in-person Flying Labs retreat in Q3 of 2022.
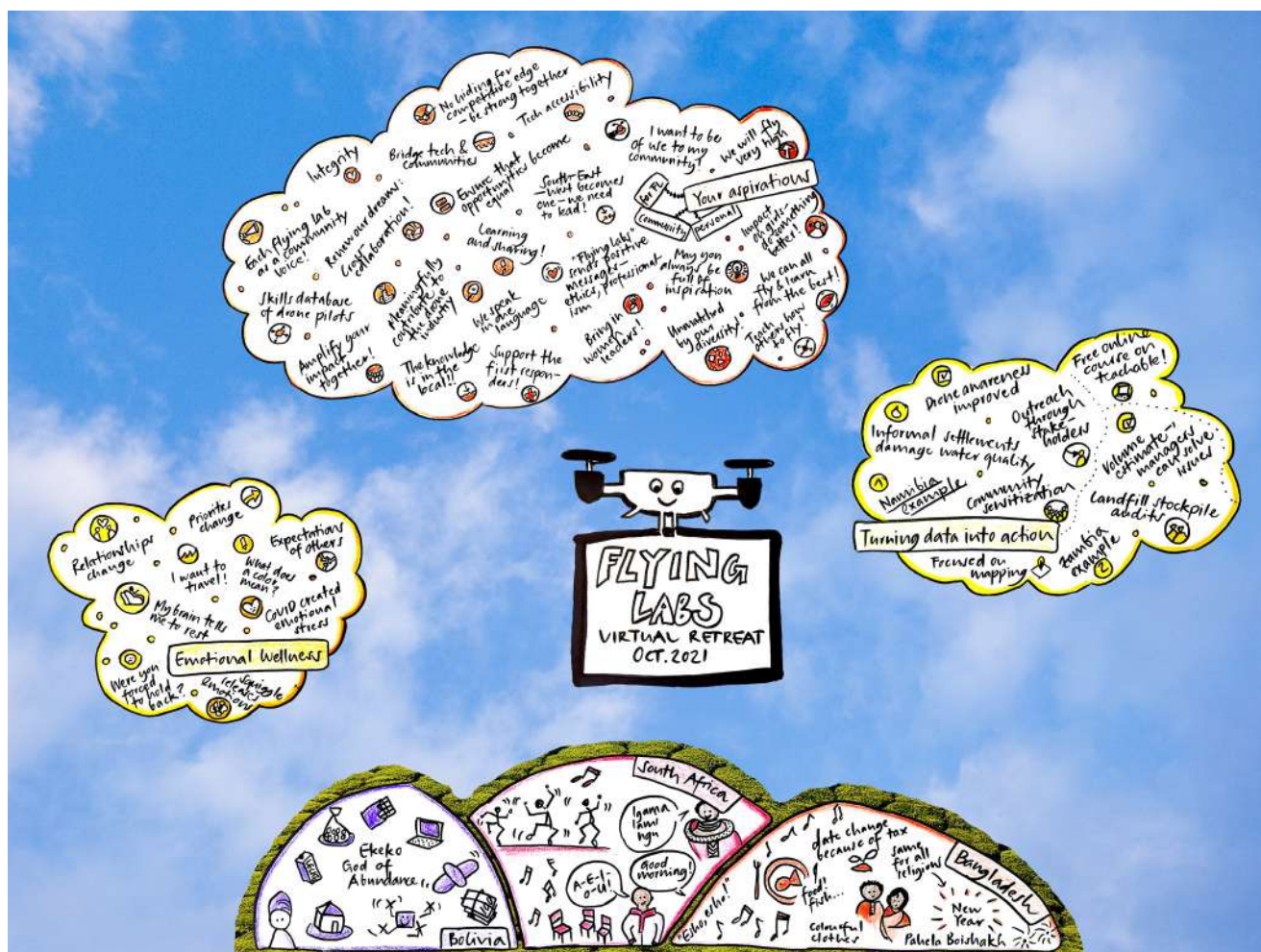
» Flying Labs Blogs

A separate blog for the Flying Labs Network was also launched in 2021 as part of our roadmap towards co-creating an independent entity to enable the network. We published a total of 68 blog posts under our WeRobotics blog site and helped Flying Labs publish 24 blog posts on the Flying Labs blog site.

» Public Use Case Library

Since 2020 when we first introduced the use case format for internal knowledge sharing, the documents were only available internally, hosted on WeShare, our knowledge sharing platform.

In late 2021, we decided to make the full use case library public, by adding a new page to the Flying Labs website. Making the use cases and their standard format of technical project details and training curriculum public allows for a larger public to easily replicate applications by building on experiences of Flying Labs.

Discover the complete library and continuously growing library here.

» Increased Video Productions

With the additional resource of a Visual Communications Expert specialized in audiovisual as part of our core team, we have increased video production and further supported the work of Flying Labs. New resources include:

- Happy International Women's Day 2021 video
- STEM Projects video
- The Future of Medical Drone Delivery is Local video
- Using Drones for Ecological Rehabilitation in Kenya video
- EmpreDron: Tech Entrepreneurship in Pandemic Times video
- The Magic of Mangroves Book Trailer video
- Flying Labs Deliver COVID-19 by drone for First time video
- Internal WeRobotics Team Retreat video
- Train the Trainer - Drone and Data Training for Flying Labs in Zambia video
- The Power of Local: Zimbabwe Flying Labs video

» International Women's Day 2021

At WeRobotics and the Flying Labs Network, we believe in leading and motivating by example, including for gender equity. The drone industry only employs 13% of women, of which most are in administration, finance and communications positions. With 52% of women at WeRobotics and 27% of women in Flying Labs, of which many work in technical positions, we are changing the perceptions of the "Technology for Good" sector. The International Women's Day, celebrated on March 8 each year, represents a fabulous opportunity to share our stories and the Power of Women with very different backgrounds and from all corners of the world coming together.

We have put together a campaign for IWD 2021 that allowed women of WeRobotics and the Flying Labs Network to share their wisdom and passion. The campaign included a specific webpage, a blog post, a social media campaign and a video. More details here.

» Conferences Attended / Keynotes

In 2021, we attended one in-person conference, gave keynotes and/or participated in panels at following conferences and events:

- UN World Data Forum in Bern, Switzerland
- Humanitarian OpenStreetMap Summit
- Drone Research for Advancing Community Healthcare
- Skydio - SkyTalk 2021
- The Innovators: WHO Innovation webinar
- ISG UAS
- ESRI User Conference
- ITU Robotics
- RiNGO Webinar

STEM Picture Book on Local Leadership

2021 was another exciting year for YouthRobotics as we officially launched the first book in our children's book series, Ariel & Friends. This series brings to life real-world, locally-led projects carried out by Flying Labs to inspire young minds (particularly girls) to take leadership roles as explorers and innovators. Our book series is the only one of its kind in the "Drones for Good Space" that is not authored or illustrated by Westerners, featuring only Western children. What's more, none of these other books emphasized the importance of local expertise or local leadership. So how could non-Western kids ever "see themselves" in these books since the characters, stories, and settings are mainly Western? This reminded us about what Nigerian author Chimamanda Ngozi Adichi describes as the danger of a single story.

True to our values, we recruited highly talented illustrators from Latin America (Mexico), Asia (India) and Africa (Malawi to co-create the look-and-feel, style and design elements for the series. As the first book in the series was to focus on an environmental project led by Panama Flying Labs, we recruited two editors from Panama who had prior experience creating children's books. The editors and illustrators worked together with WeRobotics to create the story and all the materials for the book as well as the Kickstarter campaign, which included a book trailer. The campaign successfully surpassed its funding goal of CHF 3000 within 24 hours. A total of 5,884 CHF was raised from a total of 106 pledges. The picture book was subsequently produced in two languages: Spanish and English. Towards the end of the project, a design specialist from India was also brought onboard to typeset the book so that it could be ready for publication. Several vendors for book printing, ebooks and add-ons (stickers) were also scouted to find the best in the market for creating the end results.

Enabling
Environment

» Sector Programs - Select Program Highlights in 2021

Sector Programs enable us to facilitate knowledge exchange and mutual capacity strengthening with Flying Labs while also co-creating more enabling environments with proximate leaders and local experts. These programs also serve to expand locally-led practice across multiple sectors. The select highlights below represent a small fraction of projects carried out by Flying Labs in 2021.

HIGHLIGHT

HealthRobotics

2021 was another very busy year for the HealthRobotics Program. We launched a new project with the World Health Organization (WHO) and Gates Foundation focused on optimizing the use of critical cargo drone logistics for specimen transportation. This included operational deployments in Ghana with Ghana Flying Labs and Zipline, and in Madagascar with Madagascar Flying Labs and Aerial Metric. The latter resulted in the longest cold chain medical drone delivery flight in Africa (well over 200 kilometer in range). This project was followed by a separate full-year project funded by the Twilio Foundation to deliver essential medicines including COVID vaccines to some of the most remote communities in Madagascar. Within weeks of the project starting, Madagascar Flying Labs and Aerial Metric had already delivered several hundred doses of the COVID vaccine to these communities. We also launched new projects with Pfizer, Pfizer Philippines, PagerDuty and Philippines Flying Labs to enable locally-led and locally-owned critical drone logistics to connect very remote communities to public health services. Thanks to this project, Philippines Flying Labs was the first in the country to operate cargo drones and to deliver COVID vaccines by drone. Last but not least, we worked with the Infectious Disease Institute (IDI), Johnson & Johnson and Uganda Flying Labs to enable the locally-led and locally-owned delivery of essential HIV medicines between remote islands in Lake Victoria.

AidRobotics

Nepal Flying Labs conducted drones based high resolution mapping to aid Disaster Management Initiatives in Changunarayan Municipality during Covid-19 lockdown. The team also completed Drones Based Evacuation Route Modeling (Data Capture Consulting). Japan Flying Labs continues its efforts in disaster risk reduction and response through their collaboration with local municipalities. Côte d'Ivoire Flying Labs participated in a project initiated by the NGO Humanité et Inclusion (formerly Handicap International) and Mobility Robotics in Chad to determine the depth of burial of mines previously located by a thermal camera attached to a drone. Kenya Flying Labs carried out a case study at Turkwel dam and its basins using GIS to assess, model and analyze floods.

In addition, WeRobotics provided consultancy, webinars and access to the AidRobotics, Drones in Humanitarian Action online course to ten countries which are part of the Disaster Preparedness and Prevention Initiative for South-Eastern Europe (DPPI SEE).

EcoRobotics

Japan Flying Labs helped the municipality of Inagi to assess the green coverage of the city in line with the municipality goals, reducing the cost of other expensive alternate aerial surveys. Zimbabwe Flying Labs performed aerial mapping of Monavale Wetland (Harare) to measure the extent of wetland degradation caused by cultivation and property development. Senegal Flying Labs participated in the International Water Bird Count Day using drones and AI in bird counting while Uganda Flying Labs used drones and AI to support livestock management. Zimbabwe Flying Labs performed Aerial mapping of Macadamia tree plantations. Benin Flying Labs issue geospatial field maps to help producers of cashew nuts and deeply understand their plantations and their crops' daily stresses. Panama Flying Labs worked closely with WeRobotics on the first phase of a mangrove restoration project, the first of its kind in the Flying Labs Network. WeRobotics engineered a drone-optimized autonomous release system for the aerial release of mangrove seeds. The second phase, scheduled for early 2022 will see Panama Flying Labs deploy this system in partnership with local communities and conservation groups.

DevRobotics

Benin Flying Labs team proposed using drones to map specific downtown neighborhoods to update the Urban Land Register of the city of Ouidah, as this method has the advantage of speed, accuracy, and cost. Nigeria Southwest Flying Labs conducted drone flights to assess the effect of erosion and establish linkages and balance between economic, environmental, and social capital. Senegal Flying Labs performed drone mapping of saline lands in the Commune of Loul Sessène, covering 32,800 hectares. The high resolution images allowed understanding the dynamics of the spatio-temporal evolution of saline lands and therefore a more concise development of infrastructures to fight against salinization (one of the major constraints to food security due to loss of cultivated land as well as ecosystem losses and economic losses). Zambia Flying Labs embarked on a waste management project using drones to perform stockpile audits for the Chunga dumpsite, monitoring the overspill, determining and determining stockpile volumes.

YouthRobotics

In addition to launching the first book of our series, Ariel & Friends, this has been a busy year for YouthRobotics. We have been selected by Fondation Botnar for a three year grant allowing Ghana, India, Morocco, Senegal and Tanzania Flying Labs to develop or strengthen their youth programs. This program named Fly for the Future will introduce youth to terrestrial and aerial robotics solutions. Youths will be encouraged to resolve real life problems through logical thinking and STEM and explore STEM-related studies and career paths. In parallel, Flying Labs are also developing partnerships with social good enterprises to offer local dedicated mentorship and internship opportunities helping youth to set a foot in the professional world and take on leadership roles in tackling humanitarian, health, development, and environmental challenges with the help of emerging technologies. We expect an increase of resources and learnings for this youth program, which will be of benefit to the entire network. Other Flying Labs remain active with regular youth engagements such as Bangladesh Flying Labs deploying their "First Drone Flying Experience" program focused on creating drone awareness for young learners between 7 and 15.

BizRobotics

Together with Senegal Flying Labs, we implemented our first "Drones as a Service" entrepreneurship program in Senegal. Called SandagaDrone, the program was supported by one global and three local partners: the Jansen Primesteps Foundation, IPAR, Free and IAM. It allowed Senegal Flying Labs to engage with over 100 young entrepreneurs from Dakar and the surrounding region, of which 22 teams decided to formally submit ideas and participate in a first pitching session. A local jury narrowed down the selection to 4 finalist teams. The 11 bright and motivated entrepreneurs who made up the finalist teams participated in a one-week business model and strategy training to have the needed skills to create their business plan and strategy. Supported by local mentors, including for creating an engaging pitch of their venture, the four teams participated in the Final Pitch competition in June. A jury made up of successful Senegalese entrepreneurs, innovators and drone experts selected the final winner. Learn more on the winning team here.

At Panama Flying Labs, after five months of dynamism, learning, and iteration, the EmpreDron program reached its highlight on January 28, 2021, with the Final Pitch event for the four finalists of the program with the winning team awarded USD 4,000 as seed funding.

» Competitions: Unusual Solutions

Two years ago in Nairobi, Kenya, we led a competition where nine social entrepreneur finalists from Africa, Latin America, Asia, and the Pacific pitched their "Unusual Solutions" in the hope of winning USD 100,000 to implement their solution. Sikem Brice from Cameroon was the winner with his creative approach to tackling climate literacy and action and the grant allowed him to create his organization, build his team and further develop his project. WeRobotics supported him along the way to the completion of this first grant, with the aim to set up for long term sustainability. Learn more through Sikem's Story Maps and updates on the Unusual Solutions website.

Learn more from Sikem Brice in this video interview talking about his 2-year learning journey setting of successfully setting up his social enterprise and creating first impact.

» Working Groups

WeRobotics co-facilitated a series of regular discussion and working groups with Flying Labs in 2021 on the following topics:

- Anti-Racism and Intersectionality - This Working Group identifies how local experts are being discriminated against by international organizations and their own governments with the view to design strategies to counter this discrimination.

- Working with Civil Aviation Authorities

- Flying Council - The purpose of this Working Group is to co-create FlyingLabs.org as its own independent legal entity, deeply rooted in the Majority World.

- Sector Programs - To discuss the latest opportunities and learnings in the specific sectors that Flying Labs are operational in: Health, Humanitarian, Development, Environment, Youth & Entrepreneurship

- Shifting the Power back to local experts

» Publications

In 2021, WeRobotics' Drone and Data team was tasked with creating a drone guide for the World Bank. WeRobotics and select experts of the Flying Labs Network teamed up to create a formal publication for the World Bank Geospatial Operations Support Team. WeRobotics created dozens of new resources for this publication, which spans a full five chapters. The report also draws on established WeRobotics resources. Together, these included nine workflows for different drone-based applications, ranging from agriculture and forest management to land-use, land cover planning and coastal flood management. As various teams throughout the World Bank get more interested in drones, the goal of the guide is to give examples of drone applications while showing the work accomplished by the network.

» Online Courses

Our WeRobotics Online Training Academy courses are available on Teachable and are regularly updated and include active forums moderated by WeRobotics course instructors. The two most popular and in-depth courses, HealthRobotics and AidRobotics also include regular community webinars and benefitted from new chapters in 2021:

- The HealthRobotics (Medical Drones in Public Health) course was updated with the latest on regulations, a video on key updates and use cases from 2021 as well as a particular focus on the latest developments in medical delivery drones over the African continent.

- The AidRobotics, (Drones in Humanitarian Action) course was updated with an additional chapter on safety, technology, regulations and research covering the latest developments since the course publication as well as a one hour webinar covering topics on Public Safety & Emergency Response hosted by guest speaker Romeo Durscher.

Team &
Partners

⟫ WeRobotics Team

In 2021, we grew our core team with new interns to help support our work with the Flying Labs Network, both for communication as well as community coordination. A total of 3 interns, all from Africa, the continent hosting the most Flying Labs, joined our team and introduced new ideas all the while learning from their Flying Labs and WeRobotics' colleagues.

For communications, we made the position permanent after the internship, allowing us to add a more visual storytelling angle to the many engaging and innovative projects that Flying Labs and WeRobotics are working on.

2021 was also the year with the most engineering projects yet, both for release systems (prototypes allow for drone-based releases, ranging from mosquitos to mangroves!) as well as cargo drone projects. Hence the engineering team also grew temporarily, with most projects ending at the end of the year.

HIGHLIGHT

Our absolute team highlight was the first in-person retreat. WeRobotics has always been set up as a digital company and our team is spread over 5 continents and 19 countries, which makes for a vibrant diversity within the team. Though we collaborate very closely and seldomly feel the physical distance separating us, we still love to meet up in person at least once a year. After having last met up all together in February 2019 for the Flying Labs Global conference in New York, Covid canceled our team retreat plans in 2020. So it was high time to engage in person finally again and we enjoyed a 3-day in-person retreat in Switzerland in September 2021.

》 Donors & Partners

We are grateful to our wide range of partners made up of donors, technology partners and organizational partners for their trust and for believing in our work. They are essential to our collective success by enabling us to expand our impact and scale our mission. In 2021, we have received support and closely collaborated with following donors and partners:

Core & Project Donors: Fondation Botnar, Gates Foundation, Hewlett Foundation, Infectious Disease Institute Uganda, Inter-American Development Bank, Jansen Primesteps Foundation, Omidyar Network, PagerDuty, Pfizer Foundation, Save The Children Sweden, the Swiss Federal Institute of Technology (EPFL), Twilio, the World Bank, the World Mosquito Program (WMP).

In-kind donations are an integral part of our income streams. We have received generous in-kind donations from the following companies in 2021: Autodesk, Digital Kingdom, DroneLogbook, Esri, Global Drone Solutions, Pix4D and Skydio Twin Science. It is important to note that all of these in-kind donations (software, hardware, data, etc.) go to Flying Labs and not WeRobotics.

We also closely collaborated with a wide range of essential partners in 2021, including: World Health Organization (WHO), Infectious Disease Institute (IDI), Johnson & Johnson, Population Services International (PSI), Save the Children, Aerial Metric, ATLAS, B Medical Systems, Pfizer Philippines, senseFly, She Maps, Wingcopter, Women and Drones Africa, and Beta Earth, to name just a few.

Outlook
for 2022

» Flying Labs, Inclusive Networks and Power Footprints

We expect 2022 to be an even more pivotal year for WeRobotics. Flying Labs are continuing to grow from strength to strength, which means their priorities and needs are continuing to evolve. Our top priority is to support Flying Labs in pursuing their priorities while expanding our joint efforts to co-create more enabling environments for Flying Labs and their partners across 30+ countries. We also expect demand for Flying Labs to expand as COVID-19 lockdowns continue to wane. We are therefore taking steps now to meet this expected demand. In terms of WeRobotics-specific priorities, we plan to launch our first Inclusive Networks project(s) in 2022. In other words, we plan to work with one or more organizations to enable them to adapt and adopt the Inclusive Networks model that powers the Flying Labs Network. A key element of this effort will be the launch of our detailed localization report that is being co-authored with multiple Flying Labs. This report will be a comprehensive analysis of the Inclusive Networks model as embodied by the Flying Labs Network. We will also make the Power Footprint Project one of our key priorities for 2022. To be sure, shifting power is the ultimate endgame of localization. Any localization efforts that do not ultimately reduce the power footprints of our international organizations will continue to be more symbolic than real. As such 2022 will serve as a critical year to test the resolve of international organizations and donors. Are they ready to walk the talk?

We Robotics
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Flying Labs

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