



2019 Annual Report

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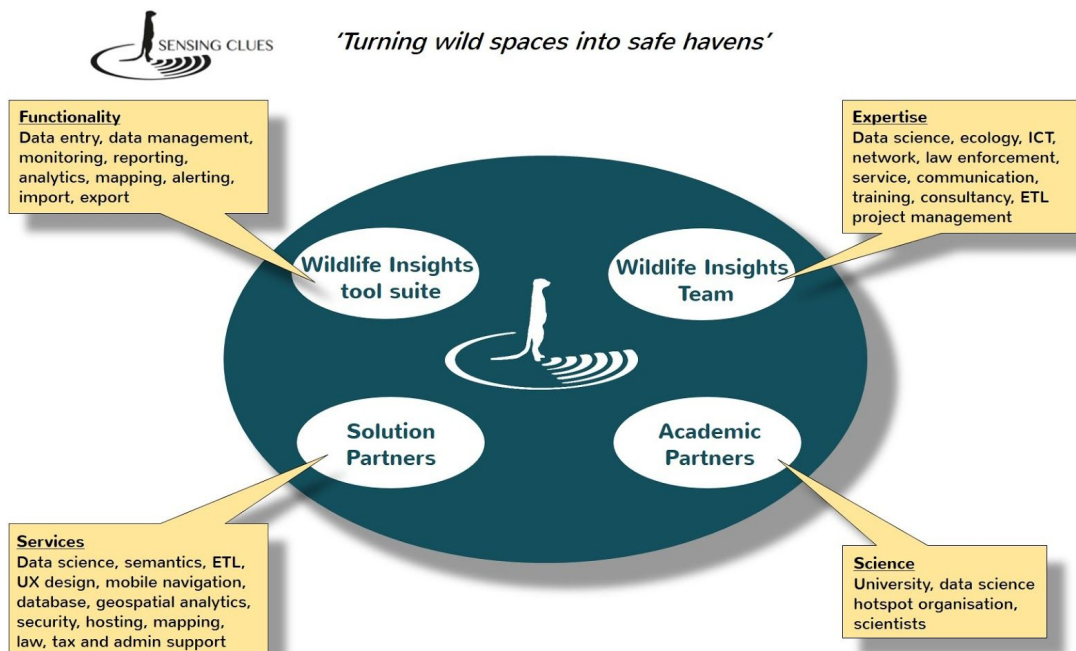
1 Introduction

1.1 Summary

This **Annual Report 2019** provides you with an overview of the **Sensing Clues Foundation**, the purpose, the main activities, organisation and financial performance in 2019FY, the 5th year in its existence.

2019 was a ‘milestone year’, mainly because the Beta version of our platform was successfully launched early in the year. Next to that important step forward, 2019 was the year that we started to work on our external communication with -as an absolute highlight- a well received article in one of the Dutch leading newspapers ‘De Volkskrant’. A promising start in 2019 and high expectations for the coming year. We strongly believe that Sensing Clues and our unique approach is developing in the right direction: better conservation of nature and better protection of wildlife. At the time this Annual Report 2019 was created, we were in the middle of the Covid-19 pandemic of which (indirectly) nature and wildlife is suffering too. Our slogan ‘**to turn wild spaces into safe havens**’ is more needed than ever!

Overview of Sensing Clues foundation: delivering integrated wildlife protection and



nature conservation solutions by combining Functionality, Expertise, Services and Science.

1.2 Preface Founder/CEO Executive Board

In 2019 the Sensing Clues **Wildlife Insights tool suite** went live. Not on one, not on two, but on three continents! Together with our Solution Partners and our growing team of highly professional and dedicated volunteers we set a new standard for data collection and analytics.

The responses from our field partners are very encouraging. Trainees master the tools within an hour and find them very complete and easy to use. That's how we designed them of course. But the proof of the pudding is in the eating. And now we've smelled and tasted how it is to turn our knowledge and expertise into solutions for nature conservation and the protection of wildlife, we can't wait to expand our toolbox and supportive services!

I can't express how grateful I am to all our Solution Partners and volunteers for working so hard to further our mission. Together we truly help our field partners to turn wild spaces into safe havens. Facing an elephant eye to eye in the African bush, touching the hair of a Marsican bear on its rub-tree, or listening to the tiger-stories of our partner in India: these experiences all deepen my resolve to make a difference. We need nature as much as nature needs us. We've got what it takes. 2020, here we are!



Dr. Jan-Kees Schakel - Founder and CEO of the Executive Board

1.3 Preface Chairman Supervisory Board

The year 2019 appears like a distant past already now, a few months into 2020 after the world experienced the first pandemic since the Mexican Flu. Indeed, COVID-19 is changing the funding landscape and thus nature conservation in a totally unanticipated way.

Because Sensing Clues aims at helping preserve the world's nature and its wildlife, the work of our foundation is even more important: we develop tools at the interface between people and information technology.

In our Annual Report for 2019 you can learn about the fascinating breakthroughs that we achieve with our partners in conservation. Information technology has the promise to make conservation not only more effective but also cheaper. However, "one has to invest before the cash register sings", and for the development by our very smart team we need investments or donations. Humanity's intrusion into the wild led to ever-more contacts between wildlife and people. We used to think about that intrusion as poaching and untrammelled land conversion, which Sensing Clues aims at halting. Now we all are taught the hard lesson that this intrusion has even more repercussions than we thought – illnesses can jump between people and wildlife.

We at Sensing Clues will rise to the challenge like we did in 2019. We trust that you as a reader consider to do the same like our many Solutions Partners. Indeed, Sensing Clues is a charitable foundation strictly adhering to the rules of good governance and transparency, so with your help we can make nature safer. For us and for wildlife.



Prof. dr. Herbert Prins - Chairman of the Supervisory Board

2 Overview important activities in 2019



December 20, 2019

VANTAGE AI STRENGTHENS SENSING CLUES WILDLIFE INTELLIGENCE

Vantage AI joins the Sensing Clues alliance!

In close collaboration with Sensing Clues and its partners, data scientists of Vantage AI will work on challenging projects ranging from computer vision to advanced spatial analytics, to further develop the Sensing Clues Wildlife Intelligence platform.

November 20, 2019

GLOBAL COVERAGE AND ENRICHED MAP FEATURES

As of today, Cluey covers the world !

Today we launched the enriched map services of MapBox. The map includes contour lines and casts shadows on mountain ridges. Both help to orientate better in areas with little to no infrastructure. Now we reached this milestone, other map layers will be included soon!

November 10, 2019

LIVING WITH TIGERS

India is home to circa 2967 Bengal tigers, which accounts for 70% of the world's wild tigers population (AITE, 2019). More than 1000 of these tigers live in human-dominated landscapes, outside protected nature reserves. PhD-researcher D.P Srivastava is using a bio-social approach to investigate the prospects of tiger survival in and around Bhopal city. Learn more about D.P Srivastava's research.

November 1, 2019

PROF. DR. HERBERT PRINS REACHES MILESTONE!

After 10.000 days of full professorship and the guidance of ca. 100 PhD students, Prof. Dr. Herbert Prins, has formally handed over his Chairmanship of the Resource Ecology Research Group at

Wageningen University. Which preludes the start of an exciting new endeavour! From now on Prof. Herbert Prins will be using his talents to investigate ways to apply artificial intelligence and big data analytics to anticipate green crimes, such as poaching of rhinos and elephants. We are honoured and glad to have Herbert as Chairman of our Sensing Clues Supervisory Board. We are looking forward to bringing advanced technologies within arms-length of nature protection and conservation organisations. A mission which recently gained momentum as our Sensing Clues Wildlife Intelligence platform has gone live in the Central Apennines, Italy! Interested in his last lecture as head of the Resource Ecology Research Group about artificial intelligence and the complicated problem of poaching? Read on!

October 27, 2019

CLUEY HELPS INCREASING BEAR POPULATION!

Cluey is loose! This week we introduced our data collecting and tracking app to the Rewilding Apennines team and its partners. During this time we got to know the team as very dedicated and having a can-do attitude in seeking ways to improve coexistence between people and bears in the Apennines.

The mountainous project area, spanning over 100,000 hectares, is the habitat of bears, wolves, chamois, eagles, vultures, and many other interesting species. It consists of protected areas and connecting corridors, which are home to both wildlife and small villages and farms. The ambitious goal of Rewilding Apennines and its partners, Salviamo l'Orso, Società Coop. Ent dei Monti Ernici, Intramontes, volunteers as Bear Ambassadors, and the authorities of the protected areas, is to increase the number of bears in the Apennines while ensuring a safe environment for both people and bears.

Since this week, Cluey has come to their aid. The tool helps to record bear-signs of presence, to map food resources that attract bears, identify abandoned barbed-wire fences in which deer get entangled, water wells in which bears may drown, and record many other types of observations. To complete the intelligence cycle, that is - to analyse the collected observations and translate these into actionable information - the Focus Analytics app was introduced.



The responses of the team are very promising:
"A revolutionary application!" - Fabrizio

"The app will help us a lot in our job for nature conservation in the Central Apennines!" - Angela

"Great job and very effective!" - Mario

Next to a number of practical suggestions, the trainees evaluated the tools as very helpful, flexible and fast. Moreover, the data collection tool is easy to learn, easy to use, and complete. It contains almost all the species, traces, and problems that are of importance to the area.

A very promising start of a worthwhile project!

September 14, 2019

4000 EURO FOR WILDLIFE RISK PREDICTION MODEL!

Today the Dutch MarkLogic team ended their MarkLogic Charity Bike Ride, which took them from London to Amsterdam to Utrecht. The weather was good and the spirits high! By the end of their 3-day journey they had raised 4000 euro for the protection of wildlife!

July 19, 2019

SOUND SAMPLING THE JUNGLE!

Automated real-time recognition of sounds is a powerful means to inform rangers of potential illegal activities in large nature reserves. Many illegal activities are accompanied with noise, varying from engine sounds to gunshots, and from cattle to dog sounds. They can all be used to alert rangers.

Machine listening is a very new and fast-developing field of expertise, heavenly based on machine learning. To design and deploy a sensor capable of recognising many different types of sounds in real time, many engineering hours and development cycles are needed. Hence, we chose to develop it in the jungle which we call our home, before we deploy it in the actual jungle.



CURRENT STATUS

Together with volunteers of the IoT Sensemakers Amsterdam, we have improved the first prototype of our SERVAL sound sensor. Meanwhile we started a citizens science project with the City of Amsterdam, the Ombudsman, and De Waag, to address the problem of noise pollution.

This Thursday we started sound-sampling the Amsterdam City jungle! Together with friends from de Waag and IoT Sensemakers Amsterdam we collected many hours of recordings of sounds that are known to bother people.

This summer we'll use the collected samples to train the SERVAL sensor, after which it will be deployed in the city to assess and address noise pollution in a much more meaningful manner than ever before.

The first results are expected by the end of this year. Once the technology has been proven in the city jungle, we'll bring it to the jungles and savannas of Africa and Asia to help protect wildlife. We can't wait!

July 18, 2019

MARSICAN BROWN BEAR

Imagine if you could accurately predict the movements of a highly endangered animal species, hours or days in advance. For those engaged in the conservation of that species, such information would be invaluable.

The Apennine Mountains is a large mountain range in central Italy. The mountain slopes are mossy and covered with huge centuries-old beech trees. The area is home to large populations of deer species and wild boar, who share their habitat with wolf, semi-wild horses and cattle.

Its most famous resident is the Marsican brown bear, which is endemic to this region. Together with the experts of Rewilding Europe, Sensing Clues will be working on improving knowledge about the whereabouts and activities of the Marsican brown bear. We'll use this information to design predictive models that can be used to prevent harmful interactions between local residents and bear, and thus contribute to their successful co-existence.

July 6, 2019

FIRST RESULTS OF FRONTIER OOST!

So proud to present to you the first tangible contribution of our new Solution Partner - **frontier oost** - a complete new version of our site!

The development of our tools for wildlife protection depends on people like Yorinde, Marco and Jimmy of frontier oost, who donate part of their time and expertise to do good.

If you, too, find our mission worthy of your support, don't hesitate to hit the donation button! For just 25 euro you contribute to the protection of 5 square kilometer, harbouring 100s of animals!

Together we turn wild spaces into safe havens!

May 19, 2019

FRONTIER OOST JOINS FORCES!

frontier oost, founded only 6 months ago by Marco, Yorinde and Jimmy, is the seventh organisation that officially joins forces with Sensing Clues to turn wild spaces into safe havens!

By applying their knowledge and skills about design thinking and incremental development, it's their mission to design for people with the technologies of tomorrow. And that's what they will be contributing to our growing coalition for wildlife!

Last Friday we signed the agreement. A memorable moment!

April 4, 2019

OPENEARS IS A FACT!

Breaking News!

We open sourced our Sound Event Recognition sensor and started working with **IoT Sensemakers Amsterdam** to boost its development and use.

Yesterday night already, participants managed to produce their first fully operational electronic ears!

In the city jungle of Amsterdam we'll be using OpenEars this summer to assess noise pollution. In the process we'll dummy proof the sensor and make it more energy efficient.

Once we've achieved that, OpenEars will be provided to rangers working in the actual wilderness to protect endangered species like elephant, rhino and tigers.

The source code can be found at [github / SensingClues / OpenEars](https://github.com/SensingClues/OpenEars). Developers interested in helping us with the development of the sensor, are encouraged to contact us!

March 8, 2019

1ST DIY SOUND SENSOR ENGINEERING NIGHT!

The SERVAl sensor is still very much a Research & Development project. Before we can deploy the sensor in the bush to detect sounds related to poaching, illegal logging, and so on, considerable efforts are needed. To this end, we sought and found opportunities to speed up the development.



IOT SENSEMAKERS AMSTERDAM

After a few introductory meetings, we had our first engineering night with IoT Sensemakers Amsterdam. Great fun! And successful, as the participants succeeded in mastering the first step: prepare and startup the existing prototype!

In the next sessions, we will be working on:

- Testing other microcomputers to run the neural network and reduce power consumption.
- Testing setup with another (cheaper) microphone.
- Adding a LoRa-module.
- Create a cheaper yet robust housing.

The result we aim at is a user manual describing the various parts of the sensor and the assembly process. With this manual everyone interested can build his own sensor.

We made the software open source, thus allowing you to participate and contribute to its development – which of course, is much appreciated!

AMSTERDAM SOUNDS PROJECT

In March / April the Amsterdam Sounds project will start. In this project, which we run in partnership with De Waag, the City of Amsterdam and the Ombudsman Metropool Amsterdam, citizens will be involved in assessing noise pollution in their own neighbourhood.

To assess distinct sound classes, such as scooters, car horns, shouting, and other noises, the SERVAL sound sensor of Sensing Clues will be used. Together with the various neighbourhoods we will be collecting sound samples that will be used to train our sound classification model.

The output of this “city jungle” project will help us to ready the SERVAL sensor for the real jungle. Both in terms of hardware, software, and sound classification algorithms.

For now, thanks IoT Sensemakers Amsterdam! To be continued!

March 1, 2019

IN THE NEWS – MARCH 2019

de Volkskrant

Google translated article from Dutch newspaper ‘De Volkskrant’

‘THIS DUTCH POLICE INVESTIGATOR HELPS TRACKING DOWN POACHERS USING AN APP’

As a police investigator, he knows the most modern technology that is used in criminal investigations. With his foundation, Jan-Kees Schakel uses it to combat poaching in wildlife parks.

Laurens Verhagen, March 1, 2019, 9:17 am

The loud bang of a gunshot. Jan-Kees Schakel and his wife are startled in the middle of the night in their bamboo hut in the jungle of Laos. They are the only ones in the resort at the time. Furthermore, only the noise of nature. And that shot suddenly. They are waiting for what is to come. Anxious minutes. Fifteen minutes later they hear a boat chug on the nearby river, towards civilization. It can only mean one thing, Schakel knows: poachers. The incident marks the start of his Sensing Clues foundation. As an investigator and strategic advisor to the police, he has many years of experience in using the most modern detection technologies that can be used in criminal investigations. This can be camera images, but also Twitter messages: anything that can help in the detection of criminals or in identifying a crisis situation as quickly as possible.

In his cabin in the jungle of Laos, Schakel realizes that exactly this kind of information is badly needed to protect nature. Here he can combine his old and his new work; Before he came to the police, Schakel worked in the tropics for years as a conservationist. With his foundation he wants to provide park rangers with the techniques that the police also use. Sensors, analysis programs, apps: anything that can contribute to the fight against poachers. If the conservationists lack one thing, it is real-time information.

Schakel quickly found out what the big problem is: there are plenty of gadgets, but they often don't work well together. Or they are user-unfriendly. As a result, much information is still conveyed in the traditional way; orally, when the rangers meet at dinner in the evening. Or via notebooks, which are only entered into someone's computer after three months. The poacher has already flown long and wide.

Part of the solution, according to Schakel, is the Sensing Clues app. Schakel, who now works only half of the time with the police and half of his income, has shown the app. Simplicity is paramount; the ranger can report via a number of icons. For example, he can

indicate that he has found remains of a fire, or a bow or tire track. "Rangers often don't know whether something is important or not. Logical too; only in combination with other tracks can the big picture become clear. "



Schakel mentions as an example the discovery of a broken machete by ranger 1 and a few days later in the same area batteries of a torch by ranger 2. "The combination of flashlight with machete can indicate poaching of giraffes", knows Schakel. "One poacher dazzles the giraffe with a powerful beam of light and makes noise with a rattle, on which the animal remains confused. His colleague approaches the giraffe from behind and cuts the Achilles tendons, after which the beast falls to the ground. "The meat of the - protected - giraffe is then sold on the market as" bushmeat ", cheaper than cow or goat meat.

MANY HOURS OF MANPOWER

"Everything starts with the observations. These can be from rangers, but also from other people you trust, such as farmers, guides or tourists. "Another important part is the data and analysis platform. All data comes in here. Schakel could never have developed this without the help of all kinds of parties that he already knew from his police work. Consultants, lawyers, data scientists, designers and programmers have all made their own contribution. By making software available without licensing costs, but also through many hours of manpower. The result is a system that everyone understands. The ranger sees one clear map on which all information can be shown. All this with the aim of taking immediate action. Furthermore, sensors are also sorely needed, because manpower alone is never sufficient. In the Rukinga Wildlife Corridor in Kenya, for example, about 120 rangers (in groups of 8) work in an area of 220 thousand hectares. That is only slightly less than the province of North Holland. Sensors can be left in strategic places. There is a lot involved, because they have to get energy via solar panels (or possibly a battery), but at the same time they should not be noticed.

Clear a solar cell hidden from a sensor in a park in Kenya. Image Sensing Clues Sensing Clues is now developing three types of sensors: for registering artificial light, electronics (for example, the signals emitted by mobile phones) and for human noise. "Poachers make a lot of noise," Schakel knows. "They think they are unobserved because the area is so large. So they can make a fire and turn on the radio. " Herbert Prins, professor of Nature Management at the University of Wageningen, strongly believes in the use of sensors and AI to track down poachers before they commit a crime. It is for this reason that he supports Sensing Clues by taking a seat on the supervisory board. According to him, nature conservation has been "militarized" in recent decades, a bad development. According to Prins, the spiral of violence - fatalities on both sides - must be broken, which is possible through the smart use of technology. He mentions the special trackers that the Hilversum ICT company Sodaq is working on. These are applied to, for example, zebras. By analyzing the behavior of a herd, it is possible to predict with "incredible precision" whether there are poachers in the area. Zebras react differently to poachers than to park rangers or tourists. They smell danger when they see people who sneak or just walk and behave accordingly, for example by running away. "

TOYS FOR BOYS

As promising as all these types of sensors are, they are not miracles, emphasizes Schakel. "There is no use for tools if it is not part of a whole box. Everything has to be well coordinated. "And that's where things often go wrong, according to Schakel. He sees spectacular and mediagenic examples passing by. Cameras in a rhino's horn, drones, you name it. "It all looks beautiful, but it has not always been well thought out." In the words of Prins: toys for boys.

That is why Schakel was initially also looked at with his neck when he knocked on the door of parks: another westerner who comes up with a gadget that will solve everything. Pauline Verheij, Wildlife Crime program manager at the animal welfare organization IFAW, is "very enthusiastic" about Sensing Clues' tools. "Often the basic problems are forgotten. Poaching flourishes in countries where there is a lack of capacity, money and political will. And where there is a lot of corruption. Rangers often have to work in poor conditions, which makes them unmotivated. There is no gas, no equipment, no decent clothes. Then you can come up with the latest techniques, but that will not solve anything. "While technology, according to Verheij, can indeed help to make poaching more effective. "I believe in it if it is simple and accessible to use." According to Sensing Clues, it meets that requirement.

By the way, you still have to pay for the Sensing Clues tool box. It is not much: a few thousand euros per year for support. Sensing Clues now has agreements with two protected areas: Rukinga Wildlife Corridor in Kenya and Phudunda in Zimbabwe. That's the beginning, if it is up to Schakel: "We have the ambition to help hundreds of parks." There is also concern about the security of the web environment: "Poaching is a billion-dollar business. As soon as poachers see that this is a success, they will pull out all the stops to lay us down so that rangers can no longer do their job. We have to take into account that we are being attacked from all sides. "So Link is still looking for help from the best cyber security companies. The constant arms race between protector and poacher will also be conducted on the Internet.

February 3, 2019

CLUEY IS READY FOR PROTECTING WILDLIFE!

Celebrating the launch of the Platform for Wildlife Intelligence

After years of development and testing, Wildlife Works and Phundundu Foundation are among the first to use our Platform for Wildlife intelligence in the field. With the tools that the platform provides, rangers learn what is exactly going on in the field, which enables them to show up in the right place at the right time to stop poachers in their tracks.

The beta-tests are scheduled to continue till Summer 2019. NGOs working in the field are invited to help us testing the Platform.

3 Outlook 2020

2020 is the year in which we start expanding our services and the network of Field Partners whom we are supporting actively.

At the time of writing this Annual Report, Covid-19 is shaking the world, including ours. On the one hand our Field Partners have less financial means and field training is hampered by travel restrictions. On the other hand, some of our corporate Solution Partners are able to donate more time and efforts, thus speeding up the development of the Wildlife Insights tool suite. Given these developments, we've set the following goals:

1. Deepen our relationship with our existing field partners, as we achieve our nature conservation goals through them
2. Expand our field partner network, thus increasing our worldwide impact
3. Attract funding to form a full-time (and thus paid) core team to enable time-boxed commitment to development and training goals
4. Continue improving and expanding data collection and analytical functions. These form the basis for better targeted nature conservation investments.
5. Develop Green Law Enforcement solutions to better protect wildlife.
6. Sharpen our public presentation and profile, to help potential field partners to find us and make use of our services.
7. Professionalise business operations, to support the growth of our organisation.

4 Sensing Clues organisation

4.1 Statutory Purpose

Sensing Clues Foundation has the following formal purpose (translated from Dutch):

Article 2.1: The purpose of the Foundation is the development and provisioning of technologies, solutions and expertise to strengthen the protection, safety and security of nature, nature conservation areas, flora and fauna.

Article 2.2: The Foundation is realising its purpose by:

- a. Engaging organisations and individuals who want to contribute to the purpose by bringing in specialised knowledge, capabilities, technologies, and/or means;*
- b. Designing and developing (technical and tactical) solutions which directly or indirectly contribute to the purpose;*
- c. Raising awareness and providing training and support which directly or indirectly contribute to the purpose;*
- d. Fundraising;*
- e. And all other lawful initiatives and activities which directly or indirectly contribute to the purpose, in its most widest interpretation.*

Art. 2.3: The Foundation is not aimed at profit making.

4.2 Formal Status

Sensing Clues Foundation is a not-for-profit organisation, officially registered in the Netherlands as Stichting Sensing Clues with fiscal RSIN number 858159752 and registered at the Amsterdam Chamber of Commerce, number 70140707.

Sensing Clues Foundation is officially registered as ANBI (Public Benefit Organisation) by the Dutch tax authorities. An institution can be qualified as a Public Benefit Organisation solely when at least 90% of the institution's efforts are focused on the public good. It also provides a number of tax advantages to donors, and requires the foundation to comply with specific administrative and transparency requirements.

Sensing Clues Foundation is located in Amsterdam, the Netherlands, and can be contacted through the following means:

Website: sensingclues.org (and also: .nl, .com, .net)

Email: hello@sensingclues.org

phone: +31(0)6-3603.7414

Members of the Supervisory Board and Executive Board do not receive remuneration for their activities.




4.3 Supervisory Board

The Supervisory Board consists of three people:

	Prof. dr. Herbert Prins <u>Chairman</u>
	Ir. Peter Hagedoorn <u>Secretary</u>
	Dr. Louis Vertegaal <u>Member</u>

4.4 Executive Board

The Executive Board consists of three people:

	<p>Dr. Jan-Kees Schakel <u>Chief Executive Officer</u> <u>and founder</u></p>
	<p>Ir. Hugo Koopmans <u>Chief Technology Officer</u></p>
	<p>Rob van Grieken¹ <u>Chief Operating Officer</u></p>

4.5 Partner Network

In 2019, the Foundation had no employees. All work was executed by individual and corporate volunteers.

Sensing Clues Foundation actively invests in four types of volunteers:

- Corporate Solution and Support Partners,
- Knowledge Partners,
- Field Partners,
- Individual Volunteers.

¹ On a temporary assignment basis for 2020FY

4.5.1 Corporate Solution Partners

In 2019, the following Corporate Solution Partners have been engaged and provided pro bono services to further our mission:

- **Baker McKenzie:** Contracten, NDAs, Disclaimers, Belastingadvies, RM-legal, etc.
- **BIT Internet Technology:** service hosting and data storage
- **Brendan&MacKenzie:** custom software development for web and mobile apps
- **DIKW Intelligence:** development of intelligence products, including ML, AI and DL
- **ESRI:** 1000s of map layers + time-geospatial analytics tools
- **frontier oost:** UX design services
- **Functional Analytics:** secure data science platform
- **MapBox:** mobile navigation technologies
- **MarkLogic:** database technology + consultancy
- **Ridder IT Services:** ETL data engineering
- **Semantic Web Company:** PoolParty semantics technology
- **Vantage AI:** development of intelligence products, including ML, AI and DL
- **WesFin Administratie:** Belastingadvies en Bedrijfsbegeleiding

4.5.2 Knowledge Partners

The following Knowledge Partners have been engaged:

- **Wageningen University and Research (WUR):** Resource Ecology
- **Jheronimus Academy of Data Science (JADS):** Data Science
- **HvA:** development of intelligence products, including ML, AI and DL

4.5.3 Field Partners

This category of partners are active at the frontlines of nature conservation and wildlife protection. As our technologies are not yet ready for full operational use, in 2019 we limited the number of users in the field to four organisations, willing and able to test and pilot the new technologies that we have been developing. These are:

- **Wildlife Works:** managing multiple nature reserves
- **Rewilding Apennines:** WITS and bear habitat suitability
- **PhD tiger project:** Cluey for citizens science-based field data collection
- **RangerCampus:** training of wildlife rangers

4.5.4 Individual Volunteers

In 2019, some 25 volunteers (individual and from corporate partners) contributed to the development of the Wildlife Insights tool suite (WITS), and supportive functions ranging from the creation of manuals to sensor development, writing social media articles, reporting, and engaging new partners.

4.5.5 Partners and their relation with Sensing Clues

Partner name	Core activities	Why partnering with Sensing Clues?	Contribution to Sensing Clues
Baker McKenzie	Baker McKenzie is an international law firm with 77 offices across 47 jurisdictions and 12,000+ employees. The firm advises companies on all legal and tax aspects of doing business. Baker McKenzie is a signatory to the UN's Global Compact, the largest corporate sustainability initiative, and we are committed to applying our legal knowledge for the public good through pro bono advice.	We were impressed by the combination of Sensing Clues' idealism and their smart, technologically advanced solutions, and entered into a long-term relationship with the organization in 2018.	By providing expertise in areas like commercial contracts, tax, corporate governance and data privacy, we help the organization stay compliant so they can focus on their core activities. We are confident that Sensing Clues will have a direct, sustainable and positive impact on nature conservation and wildlife protection.
BIT	BIT is specialised in (green) colocation, internet connections, managed hosting and outsourcing for corporate internet users and offers them the basis of IT and internet infrastructure for quality-conscious organisations.	Sensing Clues is doing important work in the field of global nature preservation and because they are fully dependent on donations, we offer our service free of charge.	The Wildlife Insights tool suite and its datahub where data from several sources comes together, runs on BIT's super redundant hosting platform.
Brendan&MacKenzie	Brendan&MacKenzie is a one-stop custom software development house specialised in the development of web and mobile applications. By working together with you, our dedicated team of designers and developers can create a digital strategy, product or service that will allow your business to launch into the future.	Sensing Clues is one of those great organisations that's making a positive impact on our world. It was therefore a logical step to partner up with Sensing Clues and help them with their mission of turning wild spaces into safe havens.	We support Sensing Clues in the development of the Cluey Android app and the new Focus Data Explorer.
DIKW Intelligence	DIKW Intelligence is a consulting firm that helps customers in data-driven value creation. Our knowledge and expertise is in the domain of data science, data warehousing and artificial intelligence. We work for SME companies and serve as a partner to gain strategic advantage with data. Besides projects we deliver data science and data engineering training and our services label Bluemine Intelligence delivers data logistics as a service.	We were here from the start, as we successfully delivered a realtime big data platform for Jan Kees when he asked us to participate. The technology we develop for Sensing Clues is closely related to our field of expertise and the Sensing Clues purpose is right so for DIKW to invest in this technology is a win-win. We strongly believe that technology is an essential for nature conservationists to keep up and battle those who have a different perspective on the value of nature.	DIKW Intelligence delivers technical expertise and support to the Sensing Clues organisation in the form of 1 day a week the CTO office. Sensing Clues hosts the weekly meetings in our office in Nieuwegein and we work on deep learning and Artificial Intelligence solutions, the SERVAl sound sensor in particular. Furthermore we monitor and keep an eye on all systems running.
frontier oost	We use our knowledge of people and technology to design user-friendly applications that focus on nature and biodiversity.	We are a psychologist and digital strategist, both fascinated by nature. We like to use this knowledge to make the earth a better place for all earthlings. Sensing Clues shows that you can really make a difference with technology and we like to contribute to that.	We ensure that the applications of Sensing Clues meet the needs of the users. We make interaction and interface designs that are very user-friendly, to provide maximum support to users in their most important tasks.
Functional Analytics	Functional Analytics is a software company focused on data science and advanced analytics. Our core product is ownR™, a platform for DevOps automation and productionization of analytics solutions with a focus on the comfort of the non-technical end-users.	Functional Analytics has decided to support the mission of the Sensing Clues Foundation because we feel nature preservation is a worthy cause and we believe in the vision of a data-driven approach to support those working to this end in the fields.	Licences and consultancy.

MarkLogic	<p>Marklogic helps organizations to integrate data for both analytical and operational applications. The software platform is being used primarily within Government, Banking & Insurance companies.</p>	<p>Providing Sensing Clues with the Marklogic data integration platform & supporting this with resources to help build both operational & analytical applications is our way to help preserve nature and biodiversity. Our employees that hands-on help Sensing Clues, find it also a personal mission to prevent wildlife from becoming extinct and therefore support the cause also in their personal time.</p>	<p>Partner and advice sensing clues in all possible ways. Provide the MarkLogic data platform as a back-end for analytical & operational applications. Provide resources to help build the applications. Leveraging the eco system of Marklogic by asking technology & services partners to participate & sponsor the sensing clues project.</p>
Ridder IT Services	<p>Consultancy in the field of Business Process Management (BPM), Robotics Process Automation (RPA), Marklogic and Java Kotlin.</p>	<p>My work and hobby is applying new technology. At Sensing Clues I can use that for a very good cause.</p>	<p>Ridder IT Services deals with the data load processes. Both balancing and management.</p>
Semantic Web Company	<p>We support companies in mastering the challenges of information management through intelligent data enrichment and analysis using Knowledge Graphs and Semantic AI.</p>	<p>Supporting life on our planet is important to us. Species Extinction and Biodiversity Loss is among the biggest risks to our planet. Using Graph technology helping that is just way cool.</p>	<p>Our contribution to Sensing Clues is our technology stack, PoolParty Semantic Suite(tm), and our ISO-certified cloud infrastructure.</p>
Vantage AI	<p>Vantage AI is a data-science consultancy that offers innovative, flexible and highly motivated talent.</p>	<p>They support causes with social impact by coöperating on a pro-bono basis through their "Vantage AI for Social Good" initiative.</p>	<p>Together with Sensing Clues, Vantage AI developed a deep learning algorithm for detecting and classifying animals in camera trap images.</p>
Wesfin Administratie Belastingadvies & Bedrijfsbegeleiding	<p>Wesfin is a network of specialists. This cooperation makes it possible to pay more attention to the personal situation of our clients. Spider in the web is Theo Willems, who directs this network from Druten. The right man or woman at the table opposite you.</p>	<p>We are proud of the fact that we can be a partner of the Sensing Clues Foundation, given that they contribute to a better world.</p>	<p>Since our organization is seen as a commercial institution, we hope to be able to contribute indirectly with our reduced rate for which we carry out our work.</p>

5 Financial Statement 2019

	2019
	<u>€</u>
Revenues	
Nett-revenue	55.451
Minus: revenue purchase value	16.010
	<u>39.441</u>
Gross margin	----- 39.441
Costs	
Costs of depreciation	590
Costs of sales	1.187
General costs	2.454
	<u>4.231</u>
	----- 4.231
Operating results	
Financial income and expenses	133
	<u>35.077</u>
Result from business operations	35.077
Tax	-
	<u>35.077</u>
Result form business operations after tax	----- 35.077
	<u>35.077</u>
Result after tax	=====

6 Approval 2019 by Executive and Supervisory Boards

This **2019 Annual Report** has been read and approved by all members of the Executive Board and the Supervisory Board:

- **Jan-Kees Schakel**, Chairman of the Executive Board
- **Hugo Koopmans**, Member of the Executive Board
- **Rob van Grieken**, Member of the Executive Board
- **Herbert Prins**, Chairman of the Supervisory Board
- **Peter Hagedoorn**, Secretary of the Supervisory Board
- **Louis Vertegaal**, Member of the Supervisory Board

On behalf of the above mentioned 6 people, I hereby declare that all members of the Executive and Supervisory Boards formally agree with the contents of this '2019 Annual Report' of the Sensing Clues Foundation.



Rob van Grieken

Member of the Executive Board

June 30st, 2020.