



mistywest



# Capabilities Statement

*The intellectual property in this document (including, but not limited to copyright) is and remains the property of MistyWest. Further, this document and all information contained herein (including but not limited to project descriptions, client information, and methodologies) is confidential and its disclosure to third parties could result in competitive disadvantage. Viewing of this document is for the sole purpose of its evaluation.*

# We Are MistyWest.

An engineering design consultancy that exists to create an inclusive and prosperous global community enabled by technology, with a focus primarily on developing intelligent connected devices that advance the *UN Sustainable Development Goals*.

Our core areas of technology expertise include **Optics, Embedded Vision, AWS/Azure IoT, Low Power Electronics, and Wireless Connectivity** (*Bluetooth, WiFi, Cellular and Satellite*).



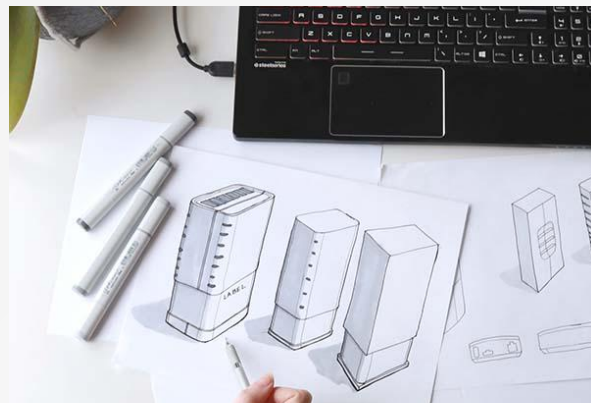
MistyWest is founded on years of successfully solving hard problems across numerous industries. Our multidisciplinary team of engineers, designers and developers provides full-stack hardware solutions that allow our clients to turn concepts into products.



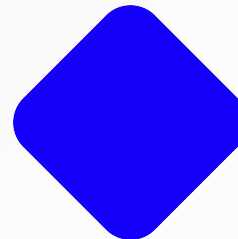
# Your Partner in Product Development.

MistyWest values clear and honest communication: our estimation process, scoping process, and invoicing process are all **radically transparent**.

We offer **informed decision making** between our technical team and prototype with scalability in mind.



As a consultancy, our team is always working on **cutting edge technologies**, and we can begin work as early as a week upon signed work orders, meaning we can dive into new projects more effectively than an in-house development team.





### Firmware Engineering

- BLE, WiFi, Cellular (TCP/IP, AT Commands, Cat M1), Zigbee
- OS & Driver Development
- Image & Digital Signal Processing
- Application Development (Python, C/C++, C#)



### Industrial & UX Design

- User-Centered Design
- Qualitative Research
- UX/UI Testing & Design
- Product Visualization



### Electrical Engineering

- Analog, Digital and Embedded System Design
- Mixed Signal, High Speed and RF Design
- Power Electronics Design
- PCB Design and Circuit Simulation



### Cloud IoT Engineering

- AWS IoT
- Azure IoT
- Dockerized application layer
- Data Science and Machine Learning



### Mechanical Engineering

- Electro-Mechanical Hardware & Sensor Integration
- Functional Enclosure, Mechanism & Assembly Design
- Rapid Prototyping, Testing, Simulation & Analysis
- Design for Manufacturing & Assembly



### Specialized Research

- First-Principles Analysis & Design
- Structured Sensing for Data Science
- Optics, Interference Filters & Spectral Imaging
- Mathematical Modelling & Numerical Simulation
- Scientific and Patent Literature Analysis



### Embedded Systems

- Specialized Sensing Systems
- Linux Kernel and App Development
- Real Time Operating System
- Custom Communication Stack
- Computer Vision



### Hardware Platforms

- SoMs with iMX6, iMX8, SnapDragon, TI AM series
- ADI SHARC and Blackfin DSPs
- Xilinx, Intel and Lattice FPGAs & CPLDs
- Nordic, STmicro, NXP, TI, Renesas, Microchip MCUs
- NVIDIA Volta, Google Coral ML accelerators

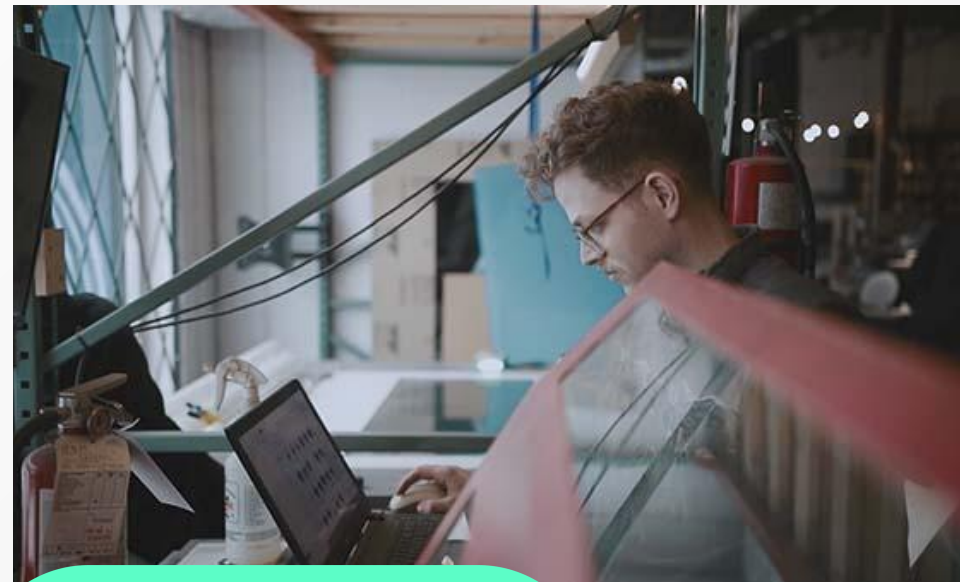
## What are The UN SDGs?

MistyWest's mission is to advance the United Nations' [Sustainable Development Goals](#)—a call for action by all countries to promote prosperity while protecting the planet—by creating technically complex intelligent connected devices that accelerate the world's transition to a sustainable future.

To the right are some of the **areas of impact** that MistyWest has already contributed work to.







## The Path to Project *Kick-Off*

MistyWest works collaboratively with clients on determining **fixed price or time-and-materials contracts** and refining the iterative-and-ongoing **project scope**. Our senior engineers will work closely with you to **understand your project's requirements** and value proposition.

We offer ongoing support to our clients with frequent updates, design reviews, visibility on our sprints, access to tools such as *Jira* and *Smartsheet*, and access to our network of partners for futurability.

Our *agile for hardware* approach allows for our clients to build the right product by quickly adapting to their customers' needs.

## Clients

We build and accelerate an abundant future with ambitious partners, clients and collaborators who are willing to take risks in pursuit of extraordinary outcomes.



## Partners

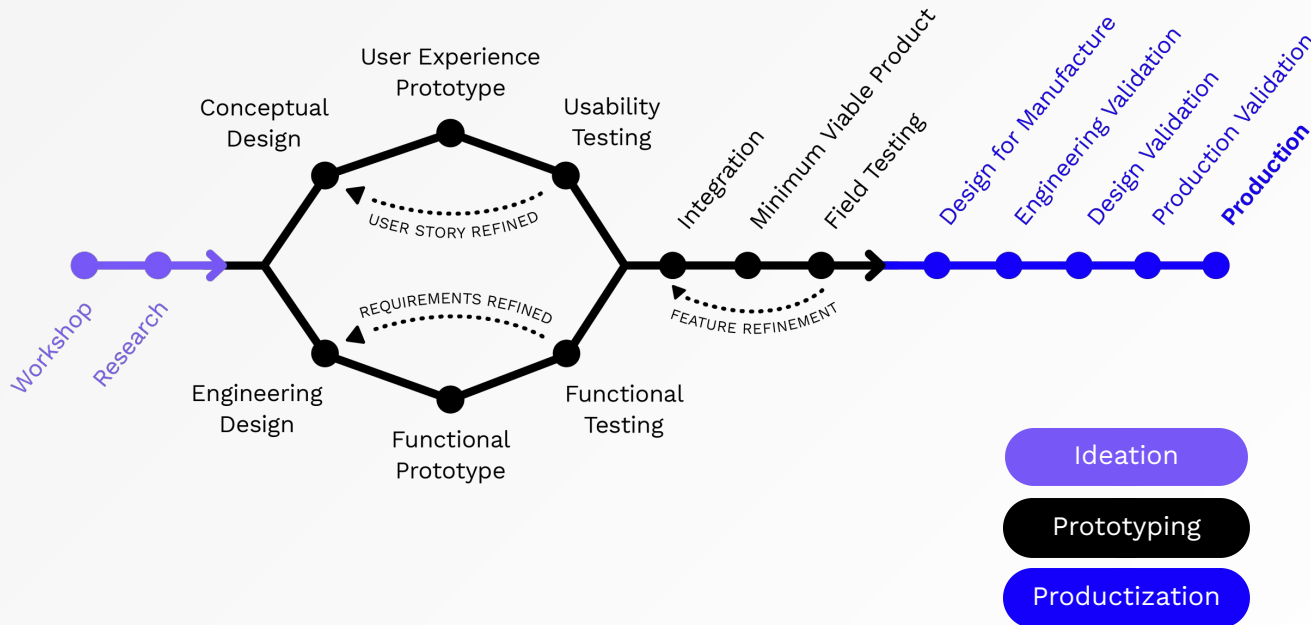
We have a long list of **vetted local and international suppliers and vendors** who work with us to deliver quality results. The following are some of the vendors we return to often:



# Product Development Roadmap

We take your ideas from napkin sketch to reality in three iterative stages: **Ideation**, **Prototyping** and **Productization**.

Developing new hardware is expensive and time consuming. MistyWest excels at creating MVPs quickly and cheaply to allow you to vet your business model and product market fit *before* investing in costly tooling and inventory.





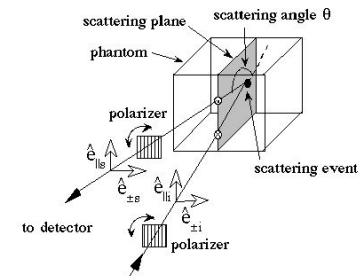
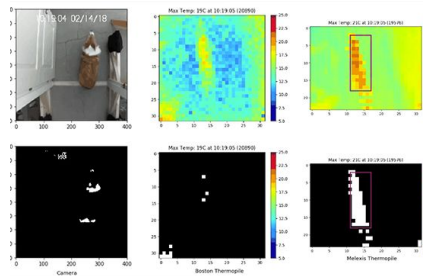
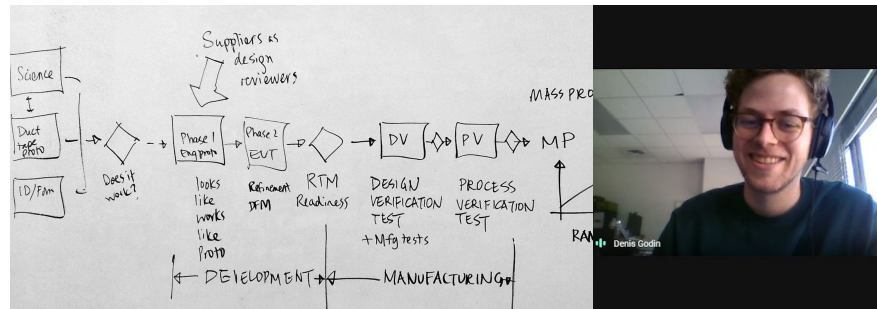
## Ideation

### Workshop

Ideation Workshops are 1-day sessions with MistyWest's senior engineers, who work with inventors and entrepreneurs to align their ideas with current trends in hardware technology.

### Research

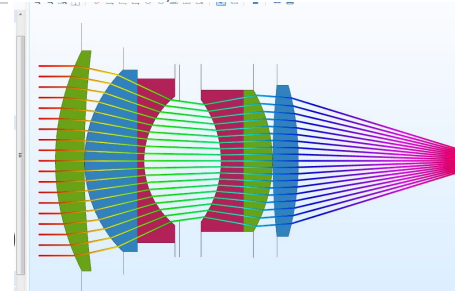
Our team conducts background research of existing or similar products, technologies available to create the intended product concept, and best available options for meeting client expectations on time and on budget.



$$\sigma_e = \sigma_s + \sigma_a, Q_e = Q_s + Q_a$$

$$Q_s = \frac{2}{x^2} \sum_{L=1}^{\infty} (2L+1) (|a_L|^2 + |b_L|^2)$$

$$Q_e = \frac{2}{x^2} \sum_{L=1}^{\infty} (2L+1) \text{Re}(a_L + b_L)$$



Duration

1 DAY TO 3 WEEKS

Budget

\$30K TO \$100K

# of Units

0

# Prototyping

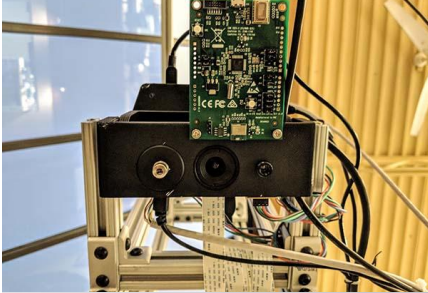
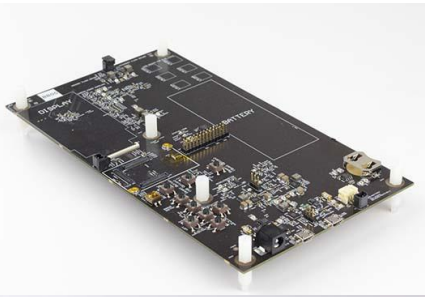
## Concept & Design

We generate concepts from your vision and down-select the best ideas to rapidly create physical prototypes using off-the-shelf components, 3D printing, and open source software and firmware. We develop looks-like Proof Of Concepts (POCs) and works-like POCs in parallel to ensure the prototypes are technically feasible.

## Feature Refinement

Integrating the lessons and designs from the previous phase, we develop a Minimum Viable Product (MVP) that undergoes iterative alpha- and beta-testing. Our team supports any required changes to identify the client’s product vision before moving onto (costly) *Productization*.

Duration	Budget	# of Units
2 TO 36 WEEKS	\$50K TO \$500K	1 TO 100



## Productization

### Design For Manufacture

Although manufacturability is a major consideration at the early stages of the product development cycle, Productization goes deeper into the details of how the parts will be manufactured and assembled in higher volumes.

### Validation

MistyWest works closely with manufacturing companies to set up production lines, and get production-quality parts for device assembly and rigorous testing to ensure the parts meet expected functionality and cosmetic appearance requirements.



Duration	Budget	# of Units
10 TO 50 WEEKS	\$100K TO \$1000k	20 TO 10,000+



## Case Studies

We've used our technical expertise to bring success to clients across many industry verticals.

The following slides **are only a handful of MistyWest's 200+ projects**, that detail how we addressed our clients' problems and the associated outcomes.

If you have a project not addressed by our case studies, **let us know**. We may still have the expertise to help—or have a partner who does.

## HAVEN

Optical Particle and  
Environmental  
Sensing Platform

Ideation

Prototyping

Productization

## EXPERTISE

ELECTRICAL ENGINEERING  
FIRMWARE ENGINEERING  
MECHANICAL DESIGN  
INDUSTRIAL DESIGN

Poor indoor air quality (IAQ) can cause issues with human immune and respiratory systems, mental health, and productivity. HAVEN (formerly TZOA) is building smart systems for indoor air monitoring to improve public access to air quality information by and to provide users with real-time data, and contracted MistyWest to develop the initial prototype for an affordable and compact multi-sensor device capable of monitoring IAQ and providing a platform for data aggregation.

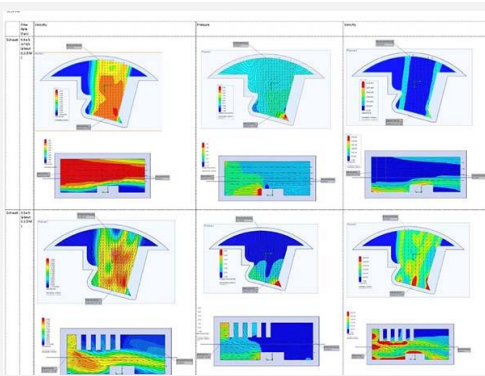
MistyWest developed multiple high accuracy prototypes for a first-of-its-kind optical particle counting technology that matched the efficacy of a \$10K device in a \$100 device. The designs were refined for volume manufacturing to fulfill HAVEN's successful IndieGoGo campaign, after which they contracted MistyWest to leverage their technology into a new design that integrates with HVAC systems.

## OUTCOMES

HAVEN's early prototype was featured in Time Magazine's [Best Inventions of 2015](#). MistyWest supported HAVEN as they grew their internal team to include electrical engineering staff and production support.

Thanks to its high accuracy and reliability, HAVEN has gathered support from academic and environmental research institutions, who are choosing the device over alternative particle sensor devices.

- Read more: [TZOA in Altium](#)



## World Wildlife Fund

## Polar Bear Tracking Device

Ideation

Prototyping

## EXPERTISE

ELECTRICAL ENGINEERING  
FIRMWARE ENGINEERING

As climate change progresses, the evolving migration patterns of polar bears has made it difficult to reliably track their locations. World Wildlife Fund (WWF) is working to protect and restore species and their habitats, and reached out to MistyWest to develop an ear-mounted tracking device. The requirements for this device included a small and lightweight form factor, satellite network communication, safely transmitting data to researchers, and an automatic release after an extended period of time.

MistyWest designed a waterproof enclosure with a battery that can last up to 6 months. A custom antenna with an RF front end was built, and an intelligent firmware algorithm that tracks the Argos Satellite Telemetry System pass schedules to determine optimal transmission time - making MistyWest one of the first engineering teams to produce a compact internal antenna Argos-based tracking device.

## OUTCOMES

- 4 devices were sent to the Winnipeg Zoo for field trials where they were fit tested on polar bears
- US Fish and Wildlife Services is conducting further tests and revisions of the devices prior to being deployed to the Arctic
- Read more: [WWF Polar Bear Tracker](#)
- Read more: [Argos Newsletter](#)





Ideon Technologies

## Borehole Muon Tomographer

Prototyping

Productization

### EXPERTISE

ELECTRICAL ENGINEERING  
FIRMWARE ENGINEERING  
MECHANICAL ENGINEERING  
SOFTWARE ENGINEERING  
FPGA DEVELOPMENT  
AWS IOT FRAMEWORK  
POWER ELECTRONICS  
REAL TIME OS

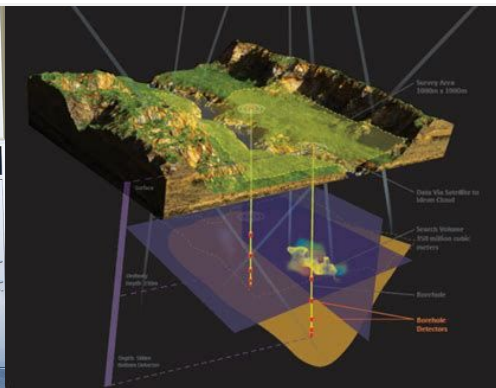
Ideon Technologies is a world pioneer in the application of cosmic-ray muon tomography, providing x-ray-like visibility up to 1 km beneath the Earth's surface. Their technology can identify and image anomalies such as mineral and metal deposits, air voids, and other structures with density properties that contrast with the surrounding earth, allowing mining companies to understand the location and value of ore bodies with much greater certainty. The results are mines that are more productive and less environmentally damaging.

Ideon's applications were limited by the size of their prototype detector. MistyWest miniaturized the electronics of a benchtop detector from 1x1x1m down to Ø 9cm by 3m, enabling deployment in boreholes. The new electronics were designed for manufacturability, including automated test fixtures for bring-up.

### OUTCOMES

We delivered 10 field-deployable prototype muon detectors in an accelerated development schedule of 12 months, reducing time to market by 1-2 years.

MistyWest has assisted Ideon with building their own internal engineering team, as well as significantly contributed to a successful \$13M CAD Digital Supercluster Application. The technology developed by our team enabled Ideon's successful \$16M USD Series A lead by Playground Global.



## Fatigue Science

Wearable Sleep  
Monitoring Device

Prototyping

Productization

## EXPERTISE

ELECTRICAL ENGINEERING  
FIRMWARE ENGINEERING  
MECHANICAL DESIGN  
INDUSTRIAL DESIGN  
HARDWARE QUALITY  
ASSURANCE

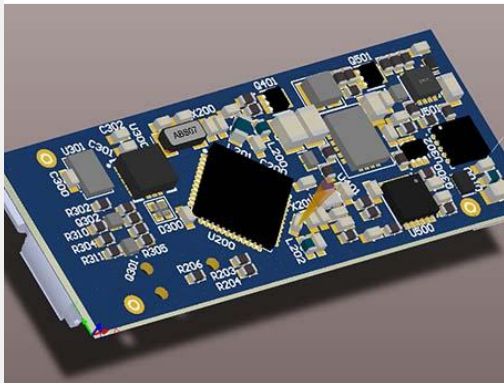
Vancouver-based company Fatigue Science is providing predictive fatigue intelligence and analytics through machine learning and continuous measurements of actigraphy to improve the safety of heavy industry shift workers and the performance of athletes.

MistyWest was approached to update the hardware and firmware for the first generation of Fatigue Science's sleep monitoring *Readi* wristband. MistyWest provided a chip-level design, custom antenna tuning and completed FCC certification, and a panelized bed of nails test fixtures was built to program the firmware onto the board, test the voltage levels and test data interfaces.

The optimized firmware extended the battery life of the *Readi* wristband from 7 to 45 days - exceeding the client target of 30 days.

## OUTCOMES

Fatigue Science initially only required a 5000 unit production run of the updated *Readi* wristband, but MistyWest's successful design resulted in the manufacturing of 25,000 units without any design changes. The wristbands were used by the Chicago Cubs' and the Toronto Raptors' championship teams in 2016 and 2019, respectively, and the platform has been adopted by 20 mine sites worldwide, solidifying its position as the industry standard for managing worker fatigue.



mistywest

WHO WE WORK WITH

Amazon Fresh

## IoT Connected Outdoor Signage

Prototyping

Productization

### EXPERTISE

ELECTRICAL ENGINEERING  
MECHANICAL DESIGN  
SYSTEMS ENGINEERING

Amazon Fresh is a grocery pickup and delivery service with an online and in-store business model, designed from the ground up to offer a seamless shopping experience.

MistyWest was contracted to design custom outdoor LED signage for the flagship launch of Amazon Fresh shopping locations in the US, with requirements for units rugged enough to withstand fluctuations in outdoor temperature, weather and light conditions.

MistyWest was responsible for all engineering from prototyping to low-volume manufacturing, as well as certification for a custom cooling system that met UL, CSA, CE and FCC standards.

### OUTCOMES

The project was successfully completed and shipped on schedule. Amazon Fresh was able to launch their grocery pickup services which included this connected signage at several locations in Seattle, WA in 2017.



mistywest

WHO WE WORK WITH

Attabotics

## 99.999% Accurate Localization Sensor

Ideation

Prototyping

Attabotics is building intelligent robot platforms for warehouse fulfillment that operate in three-dimensions, with a vision of creating seamless commerce systems that save cost, time and space. MistyWest was asked to support ideation and development of a supplementary Time-of-Flight (ToF) sensor suite for Attabotics' wheeled robots. Integration with the existing robot control systems, high accuracy and reliability, and component availability for 3 years of production were all required.

MistyWest designed a single rigid-flex-rigid board to fit within the constraints of the mechanical design, and The ToF sensor suite was tested on a custom developed "robot-analog" to investigate the effect of lighting conditions, reflections and debris. Ultimately, our team achieved 99.999% accuracy feature detection using a calibrated front-end photometric sensor package.

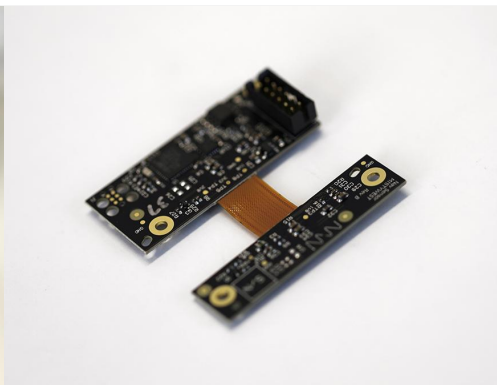
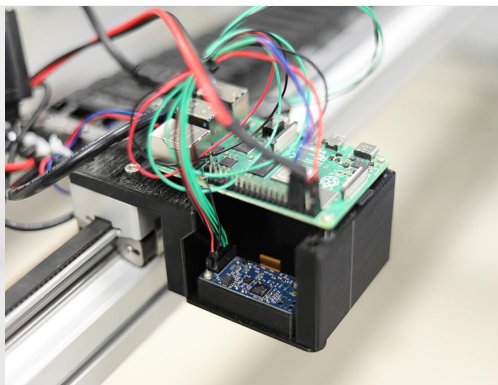
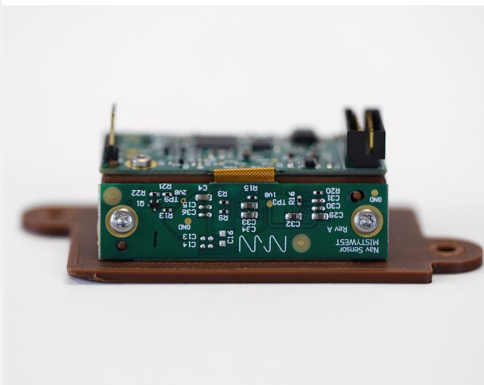
## OUTCOMES

MistyWest designed and assembled 150 photometric sensor boards and shipped a total of 128 units, which integrated neatly with the Attabotics system and required minimal redesigns.

The project was completed within 9 months to meet certification and testing schedules; all amid global manufacturing and supply chain crises. The sensor suite is currently being A-B tested in real-world scenarios, with on-going support.

## EXPERTISE

ELECTRICAL ENGINEERING  
FIRMWARE ENGINEERING  
MECHANICAL ENGINEERING  
OPTICAL DESIGN  
DATA SCIENCE  
DIGITAL SIGNAL PROCESSING  
DFM



mistywest

WHO WE WORK WITH

VodaSafe

## Handheld Sonar and Scanning Device

Ideation

Prototyping

VodaSafe is a BC startup dedicated to creating life-saving products that enhance public safety in aquatic activities. With core technology already proven, VodaSafe contracted MistyWest to develop a Minimum Viable Product (MVP) of a first-of-its-kind device named the AquaEye®: a handheld sweeping sonar technology intended to quickly scan underwater for drowning victims.

MistyWest was responsible for an improved form factor for ergonomic use and updating electrical components. The team executed robust user testing and functional testing of the device's sealing and interactions underwater, and redesigned a board that included a battery management system, various sensor integration, and a wireless charging solution. All elements were integrated into the final 5 fully functional and waterproof MVPs.

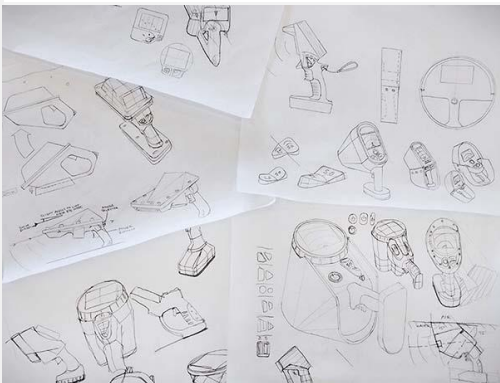
### OUTCOMES

The prototypes from MistyWest were successfully demonstrated at a conference, resulting in Vodasafe securing additional pre-seed funding.

In July 2020, VodaSafe raised an additional \$1.4M in seed financing to further expand the availability of AquaEye®. The device is now in use by Fire Rescue, Lifeguard, Law Enforcement and Search and Rescue teams for rescue or recovery missions.

### EXPERTISE

ELECTRICAL ENGINEERING  
MECHANICAL DESIGN  
INDUSTRIAL DESIGN





## General Fusion

Lithium Wall  
Diagnostic Tests  
& Architecture

## Ideation

General Fusion is on a mission to develop a novel and commercially viable approach to fusion energy. MistyWest was contracted to conceptualize new methods for accurately measuring the shape of a rapidly-changing liquid lithium surface, and hosted an all-hands team ideation and brainstorming session with the client to understand requirements for lithium compatibility and high electromagnetic interference. MistyWest then proposed and performed feasibility research on four measurement concepts: *patterned illumination imaging*, *in-cavity impedance probes*, *pulsed lidar* and *ultrasound*.

MistyWest later developed a System Architecture Design to capture analog signals from General Fusion's test and diagnostics system that was robust enough to operate in a high voltage and high EMI environment, and could be scaled to accommodate future expansion plans.

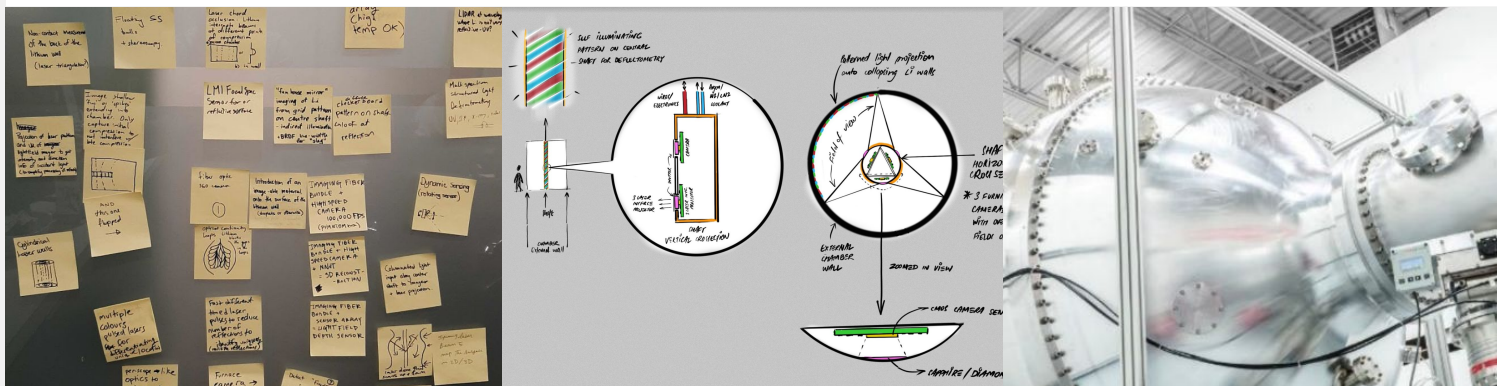
## OUTCOMES

MistyWest's work with General Fusion is helping strengthen partnerships with BC-based tech companies, aligning with their strategy to create clusters that accelerate innovation in fusion and related technologies.

General Fusion has since received approval to build a plant near the United Kingdom Atomic Energy Authority's (UKAEA) Culham Campus.

## EXPERTISE

ENGINEERING PHYSICS  
OPTICS  
MECHANICAL DESIGN  
CONCEPT GENERATION  
BRAINSTORMING  
SIGNAL PROCESSING





Confidential Client

Smart Toilet

Ideation

Prototyping

EXPERTISE

ELECTRICAL ENGINEERING  
FIRMWARE ENGINEERING  
MECHANICAL DESIGN  
SOFTWARE ENGINEERING

A nonprofit scientific research institute based in Menlo Park developed a smart toilet camera that collects data for a bowel-based health monitoring system of seniors' gastrointestinal and urinary health issues, helping reduce medical interventions. MistyWest conducted initial feasibility assessment, design and manufacture of the toilet camera, with an objective to build a device and AI-based software solution that could automatically monitor and detect anomalous trends.

MistyWest provided full stack engineering services for this project. The project team designed a mechanical enclosure for wet environments, RFID for user identification, developed a web application to test and run diagnostics on the device, and interfaced optical sit detection sensors. In 8 months, MistyWest delivered a self-contained, multi-sensor toilet insert that could automatically collect visual data.

OUTCOMES

The client deployed 15 of the smart toilet cameras to senior care facilities to collect health data, which have been successfully operating for 1.5 years.

The devices are improving quality of life for residents by helping doctors rapidly understand how changes to medication and diet can lead to gastrointestinal issues. Earlier detection of these issues is also reducing the cost of medical interventions.



Confidential Client

## Sensor Suite for Hydradermabrasion Handpiece

Ideation

Prototyping

### EXPERTISE

ELECTRICAL ENGINEERING  
FIRMWARE ENGINEERING  
MECHANICAL ENGINEERING  
OPTICAL DESIGN

A company who offers award winning, patented skincare technologies and solutions requested MistyWest's assistance with improving their handpiece that's used during facials as part of the hydradermabrasion procedure. Requested improvements included the addition of serum flow rate control, sensor integration, bluelight, and vial and tip identification.

MistyWest conducted an ideation session for handpiece improvements with client stakeholders to generate feasible solutions. The results of the session were further explored using decision matrices, prototypes, breadboard/benchtop builds and reports, prior to building Proof of Concepts (POC) for vial and tip identification, bluelight, force sensor, and flow control subsystems.

### OUTCOMES

MistyWest's ideation workshops and POCs for the different handpiece subsystems will be tested by the client to determine which features should be included in an integrated system. Subsequent surveys have indicated that buyers are interested in the new features.



Confidential Client

Data Collection  
Robot

Prototyping

EXPERTISE

ELECTRICAL ENGINEERING  
FIRMWARE ENGINEERING  
SOFTWARE DEVELOPMENT  
RTK GPS  
ROS

The exploratory R&D division of a major US tech company is developing novel solutions for more scalable and sustainable food systems. They hired MistyWest to build an early-stage prototype and control interface for an agricultural data collection robot for monitoring soil health.

MistyWest developed a high bandwidth and scalable sensor platform with an efficient image acquisition and processing pipeline capable of storing and localizing 250 high resolution images per second during an 8 hour run. Using Realtime Kinematic (RTK) GPS, the system provided positional accuracy of specific plants to within 1 cm. Drivers for all peripherals were implemented to connect to the Robot Operating System (ROS) framework.

A control interface that the device operator can only access through a web browser was designed, enabling the user to have full control over the robot.

OUTCOMES

MistyWest delivered a functioning prototype on schedule that was used in initial field trials for data collection

Following successful deployment, additional internal funding was allocated, eventually resulting in the launch of a spin-out company around the data collection robot, with a mission to use data to cultivate sustainable agriculture.



Confidential Client

## Computer Vision Diagnostic Tool

Prototyping

### EXPERTISE

ELECTRICAL ENGINEERING  
FIRMWARE ENGINEERING  
MECHANICAL DESIGN  
INDUSTRIAL DESIGN  
HARDWARE QA

An emerging Artificial Intelligence company with a novel solution to diagnosing streptococcal pharyngitis (strep throat) approached MistyWest with a pre-existing prototype of a handheld spectroscopic device. The device required a complete redesign, as it was deemed unsafe for clinical trials by the Internal Review Board (IRB) of key clinical partners, due to requiring direct patient contact.

MistyWest worked closely with the client's team to define the project requirements at the level required for an FDA Investigational Device Exemption (IDE) application. The redesigned device included a spectroscopic imaging system with improved accuracy, and increased irradiance of UV LEDs - eliminating the need for direct contact. A disposable injection-molded plastic barrier was also designed to protect the device from potential contamination during use.

### OUTCOMES

MistyWest prepared a full documentation package for hospital IRB submission, and the updated spectroscopic device met the requirements for usability and deployment in a clinical setting, achieving a critical milestone for our client.

The client ran successful clinical studies at UCLA involving hundreds of patients. They later raised \$5 million in funding from major venture partners, allowing them to further develop and improve the device for wider use.



mistywest

MIT University

## Hub Mounted Electric Bicycle Wheel

Ideation

Prototyping

### EXPERTISE

ELECTRICAL ENGINEERING  
FIRMWARE ENGINEERING  
MECHANICAL DESIGN  
SYSTEMS ENGINEERING

Based on technology invented by MIT, Superpedestrian founding members reached out to MistyWest to make the next generation prototype for the Copenhagen Wheel reliable and cost effective.

Key challenges for this product were the tight integration of electric motor, power electronics, and battery in a sealed enclosure. MistyWest modeled and simulated thermal dissipation throughout the system, and modified designs for increased reliability and better performance.

WHO WE WORK WITH

### OUTCOMES

- Prototype designs, modeling, and simulation on all critical components
- Design iterations for reliability and performance
- Enabled launch of the product in 2017





## Cannabix Technologies

### Breath Collection Unit

Ideation

Prototyping

## EXPERTISE

ELECTRICAL ENGINEERING  
FIRMWARE ENGINEERING  
MECHANICAL DESIGN  
APPLICATION SOFTWARE  
DEVELOPMENT

Cannabix Technologies Inc. is developing a THC detecting breathalyzer for law enforcement. They brought on our team for full-stack engineering of a functioning Breath Collection Unit (BCU) prototype to collect and store samples, and interface with their breathalyzer.

We prototyped airflow geometries for accurate flow rate measurement and sensor performance validation, and developed several feels-like foam models for UX prototyping, with different mouthpiece and cartridge styles for human interface exploration. A companion Android app was developed that connects via Bluetooth and displays real-time measurements of all data collected.

## OUTCOMES

- Delivered 2 fully functional prototypes within the short timeline required by the client
- Implemented breath volume, CO2 content, temperature and humidity sensing
- Cannabix saw a \$17 million jump in shareholder value when the prototype completion was announced





mistywest

Proskida

## Smart Ski Grip

Ideation

Prototyping

### EXPERTISE

ELECTRICAL ENGINEERING  
FIRMWARE ENGINEERING  
RF ENGINEERING

Proskida is developing a set of cross-country ski pole grips that can track skiers' form and performance, had an initial electrical design but were experiencing issues both with electrical and firmware design. They approached MistyWest for ground-up firmware development and electrical design support.

The first phase of this project was System Architecture, creating a freeRTOS-based platform and developing drivers for sensors. The second phase of development was System Optimization, and developing additional features for field testing. The third phase included implementing on device storage for all captured data.

WHO WE WORK WITH

### OUTCOMES

- Complete Firmware Development
- Design Support for Hardware Design
- Optimized Bluetooth usage for higher data throughput for data streaming as it's captured
- System Architecture Design allowing system scaling as features and requirements are added
- Complete System Testing, to provide analytics on performance system-wide





## WHO WE WORK WITH

Ideation

Prototyping

## EXPERTISE

ELECTRICAL ENGINEERING  
MECHANICAL DESIGN  
INDUSTRIAL DESIGN  
OPTICS

Confidential Client

## Novel Spatial Mapping Helmet

### THE STORY

A startup bringing VR technologies to the commercial real estate market asked MistyWest to assist with research and development of a novel 3D mapping camera technology whose function is to capture high-resolution 3D map data of physical spaces.

Requirement definitions for this project included understanding key challenges of integrating 7 high resolution cameras into both an existing helmet design and the custom triggering system, and collecting requirements for the critical components of electrical engineering, and optical and mechanical design.

### OUTCOMES

- A rigid camera mounting frame was designed that can be integrated with the REscan main helmet frame, while also navigating around complicated weight and cable management requirements
- MistyWest eventually built a second prototype, featuring the new camera bracket, 7 high resolution Point Grey cameras, and most notably the new Velodyne LiDAR 3D mapping system



## WHO WE WORK WITH

Neurio

# Energy Monitor Enclosure

Prototyping

## THE STORY

MistyWest was approached by Neurio to help design an enclosure for a new cost-reduced version of their current sensor, with a separate mounting bracket for ease of installation.

## EXPERTISE

MECHANICAL DESIGN  
INDUSTRIAL DESIGN

An industrial design phase explored the overall design intent of the product, and our team worked closely with Neurio to define the requirements for this project. The mechanical design considered manufacturability of the parts, as well as robustness to survive drop and impact testing. 3D printed parts were created to check aesthetics, and Vacuum Cast prototypes were created to test fit, form and function, before moving to injection molded parts.

## OUTCOMES

- Developed an enclosure to house the electronics circuit board to meet client requirements
- Delivered low-volume prototype parts to check fit, form and function
- Delivered full design package for injection molded production parts
- Device survives drop test and steel ball impact testing
- Injection molded parts in production

mistywest

WHO WE WORK WITH

Neurio

## Clip-on Current Transformer

Ideation

Prototyping

## EXPERTISE

MECHANICAL ENGINEERING  
DESIGN FOR MANUFACTURE  
ASSEMBLY

### THE PROBLEM

Neurio approached MistyWest with a novel clip-on current transformer design that would significantly simplify the installation process with their current Energy Monitor Devices.

### THE SOLUTION

From initial concept through multiple iterations, the many requirements for size, shape, fit, function, installation, materials, manufacturing and assembly, certification, and reliability were used to drive the design. 3D printed prototypes were used to define the shape that could be installed in almost every conceivable configuration, from which an iterative design process was used to create an enclosure that achieved all the functional specifications of the product.

### OUTCOMES

- Created a fully functional universal current transformer design to meet client requirements
- Delivered a full design package for volume manufacturing
- Device passed UL certification
- Product is currently in production





## WHO WE WORK WITH

Ideation

Prototyping

## EXPERTISE

MECHANICAL DESIGN  
INDUSTRIAL DESIGN

Neurio

## Gateway Enclosure

### THE STORY

Neurio requested help designing an enclosure for a Gateway device that could be used to connect their energy monitor to other devices in an integrated home power system.

MistyWest worked closely with Neuroio to create an enclosure for their existing electronics circuit board, with a focus on industrial design and cosmetic aesthetics, influenced by themes centered around the target audience of the device. Mechanical design then followed the industrial design with intent to create a functional enclosure for the circuit board, with provisions for LED indicators and connector placement, structure, and internal mounting features.

### OUTCOMES

- Developed an enclosure to house the electronics circuit board to meet client requirements
- Delivered 10 sets of enclosures, which were assembled into fully functional demonstration devices that were presented to potential customers to showcase Neuroio's product offerings

Let's make impact.

[contact@mistywest.com](mailto:contact@mistywest.com)

 [mistywestvr](#)

 [mistywest](#)

554 East 15th Ave  
Vancouver, BC V5T2R5  
Canada



[mistywest.com](http://mistywest.com)



**mistywest**