

INVESTOR PITCH DECK



Nothing hides from us.

S₄ MOBILE
LABORATORIES

Our Team



Afrin Lopa
Senior Scientist
Analytical Forensic Chemistry



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Advisor
CEO AMG Consulting



Andrew Somrack
Senior Engineer
Mechanical



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Anthropology Center



Joe Work
Senior Engineer
Electrical



Lamalani Suarez
Senior Scientist
Environmental Biology



Linda Barrett
Principal Scientist
Soil Chemistry



Tim Matney
Principal Scientist
Archaeology

**S4 MOBILE
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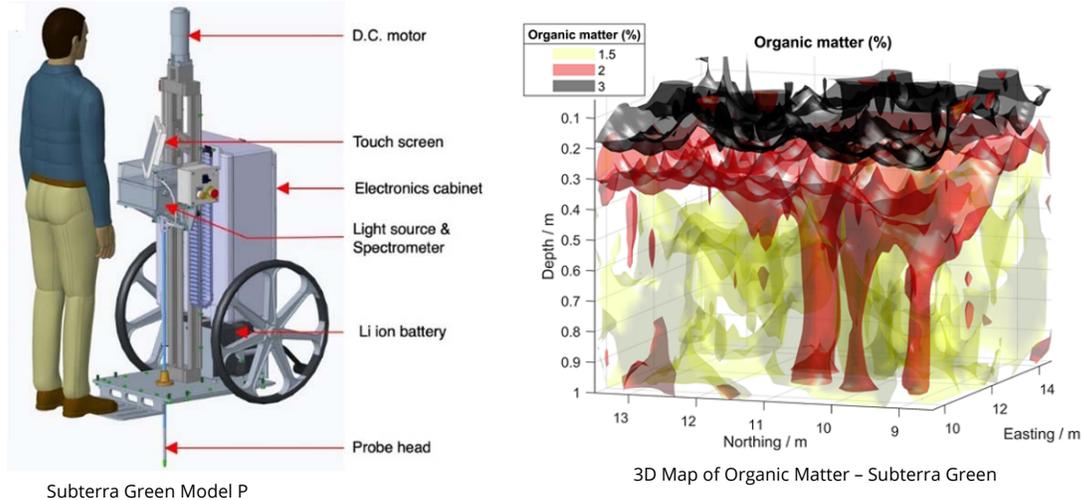
This is our team. We are an interdisciplinary group of technologists, scientists and engineers. Our Advisory Board mirrors the company with a mix of experienced entrepreneurs and industry experts.

David Perry is the company's Chief Technology Officer. He is an emeritus Professor of Chemistry at UA whose academic career focused on the exploration of uses for spectroscopy. He is a fellow of the American Physical Society and a Member of the American Chemical Society with a wide range of scientific publications. David oversees both the R&D and Engineering teams.

I am the Chief Executive Officer. In the past, I have held lead executive and technical roles in five startups, including three as founder. My companies have launched more than a dozen products, and I am experienced in early adopter B2B sales for new technologies. Currently, I oversee business operations at S4.

Subterra Mobile Soil Laboratory

Shallow Subsurface Soil Spectroscopy (S4)



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Our company develops, manufactures and sells mobile soil laboratories which we call Subterra. The figure on the left is an engineering design of our prototype.

The operation of the Subterra is simple. A probe is driven one meter into the soil. Every few centimeters light is pushed down a fiber optic cable and out a small sapphire window at the tip of the probe. The light is reflected back up the shaft to a spectrometer and onboard computer for analysis of the chemicals present in the soil.

The spectra on the right is an example of what we see with the Subterra Green – our environmental unit. The figure shows a 3D isosurface map of organic matter in the soil at a Kansas study site. It shows relatively high organic matter content in a pit cache feature located near the center of the surveyed area.

Remember, we can look for hundreds of different chemicals in the soil – so while the Subterra Green is looking for organic matter in this case, the technology can be applied to many different chemicals – toxic hydrocarbons, lead or nitrogen runoff, to name a few.

Customer Need

Agricultural and Environmental

To date, the **necessary tools do not exist** for measurement of soil organic carbon to the degree of accuracy and statistical confidence necessary.

- *Frontiers in Environmental Science*

Method	3D Map	Cost	Speed	Difficult Terrain	Minimal Invasive	Sample Depth	Accuracy
Subterra Green	✓	✓	✓	✓	✓	✓	✓
Soil Core Sampling / Laboratory Analysis	✗	✗	✗	✓	✗	✓	✓
Lab Measurements (Dry Combustion)	✓	✗	✗	✓	✗	✓	✓
Chromameter (Soil Color)	✗	✓	✓	✓	✓	✗	✗
Tractor with Sensor (or sub-soil plow)	✗	✗	✓	✗	✗	✗	✗
Pickup Truck with Probe (i.e., Veris)	✓	✗	✓	✗	✗	✓	✓

\$3.4B

Global Soil Testing Equipment Market 2019

\$5.2B

U.S. Carbon Credit Market

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Through the NSF ICORPS program, we have interviewed 200+ potential customers to understand their needs and how they buy equipment.

The specific **customer need** the Subterra Green addresses is the ability to accurately, quickly and cheaply measure soil organic carbon. Two clear market drivers emerged from our interviews. First, the agricultural community desires improved methods of **promoting healthy soils**, particularly through increasing soil organic carbon content because it leads to high yields, lower costs through reduced fertilizer usage, and more effective farm management. Second, the environmental community seeks to **increase carbon sequestration** in order to reduce atmospheric CO₂.

To date, no solution meets all the requirements of farmers and environmentalists as shown in the competitive analysis table. The market sizes to the right are substantial, and we believe our technology will be disruptive and transformative.

Current Status

Subterra Green Model P

Stage
Proof of Concept ①
Prototype Design ②
Field Validation ③
Commercialization ④



New probe being tested and calibrated in the laboratory
- 10/26/2020



Team on site testing
new probe design
- 11/3/2020

Subterra Grey Model P (Mach 3) during field
testing at BOUNCE Center - 11/20/2020

The Subterra Green is currently in Stage 1 of our four stage development cycle.

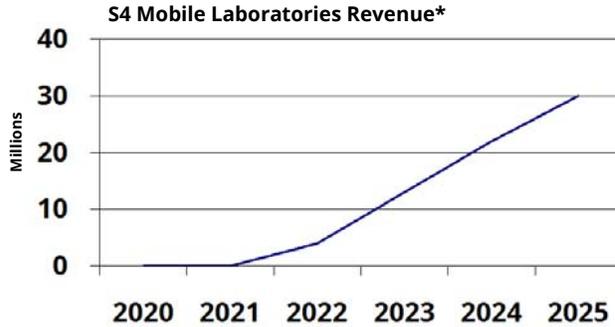
The design of the Subterra Green is based on the Subterra Grey, our forensics unit, shown in the photos. The Subterra Grey is currently in Stage 3. The differences between the Subterra Grey and Green are a different spectrometer and different software algorithms for analyzing the data.

The Subterra Green proof of concept is currently being funded by a \$10,000 sub-award from the Environmental Protection Agency. We have applied for a \$100,000 USDA SBIR Phase I grant to complete Stages 2 and 3 including field tests with identified early customers. Stage 4 will be funded by a \$600,000 USDA SBIR Phase II grant expected in October 2022.

One U.S. patent application (serial number 16/901,305) was filed for forensics on June 15, 2020. Two more provisional patents, including one for our environmental process, have been filed. A technology transfer with the University of Akron has been executed. A trademark application for "Subterra" has been filed.

Pre-Seed Funding

Current Round 2020-2021



U.S. Serviceable Available Market

Subterra Grey
\$102M

Subterra Green
\$300M

Market Share

Year	2020	2021	2022	2023	2024	2025
Subterra Grey	<1%	5%	11%	19%	28%	
Subterra Green			2%	5%	8%	

* including Subterra Grey Model P, Subterra Green Model P, database subscriptions, and consumable sales.

\$438 K

Total raised to date in 2020.
All non-dilutive. No debt.

\$1M - NSF SBIR Phase II Proposal Pending
\$100K - USDA SBIR Phase I Proposal Pending

\$250 K

Pre-Seed Funding Sought.
SAFE preferred. 14% ownership.

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We have raised \$438,747 in 2020. All our funds have been non-dilutive grants, and the company has no debt.

We are currently seeking a pre-seed round of \$250,000. This would be concurrent with our \$1M NSF award for Stage 3 of the Subterra Grey and a \$100K USDA award for Stage 1 of the Subterra Green. Both federal awards are restricted in use to technical development – so, our private funding would be used to build a sales and marketing team and begin commercialization.

Future rounds are expected to be used to complete the manufacturing build out for Subterra units, explore internationalization, and develop new market opportunities for our technology.



Thank you very much. Questions?